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STEEL

The Magazine of Metalworking and Metalproducing

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Plastic Packaging of Machinery
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Braze-Welding Damper Windings

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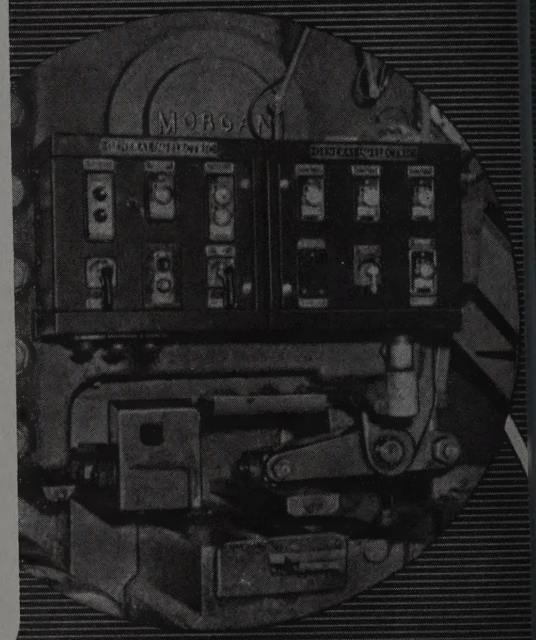
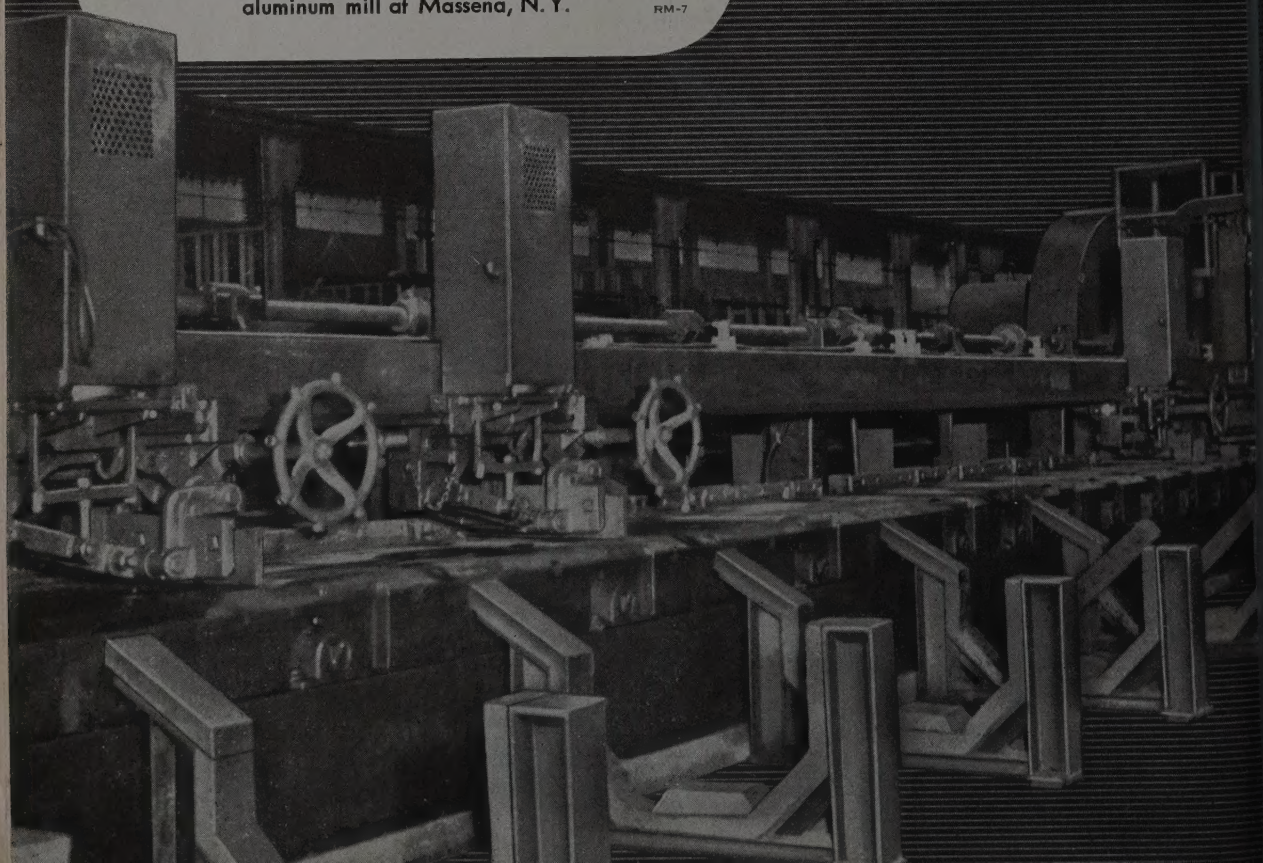
Illustrated: A New Bar Shear and Table developed and installed by Morgan-Worcester in a new aluminum mill at Massena, N.Y.

RM-7





As the EDITOR VIEWS the NEWS

Futile Washington

Something more devastating than the recent break in the stock market will be necessary to shock official Washington into realizing that economic conditions are going from bad to worse and that much of this unhappy condition is due to bungling on the part of government agencies.

Today millions are idle because maritime workers are striking to force a government board to reverse a wage decision. The automobile industry is appealing to the government to take drastic steps to relieve an acute shortage of lead—caused by a complex series of government subsidies, price rulings and import restrictions—which threatens to slow motor car production. Concurrently manufacturers everywhere are complaining bitterly about their inability to obtain steel and are wondering what can be done to relieve the present intolerable situation.

The quick answer is that little can be done until the government decides whether its job is to deal with realities or to prepare for the deflation its leftwing contingent has been forecasting since V-J Day. While President Truman, by his refusal to inject the government into current squabbles, undoubtedly is trying belatedly to get the government out of business, the second echelon of government officials is building up bureaucratic forces to combat the deflation which they insist is in the offing.

A case in point is the steel shortage. Production of steel ingots in August was at a postwar high. But largely because steel producers earlier in the year lost 15,000,000 tons of ingot output through strikes, demand far exceeds supply. Currently the major threat to continued high production is a shortage of scrap. Two weeks ago the Scrap Industry Advisory Committee recommended that OPA increase the price of scrap—the obvious remedy after all others had failed. OPA toyed with this recommendation two weeks and then came out with a "final decision" that the price of steelmaking scrap will not be increased and that a six-point program to curb hoarding will be inaugurated. Instead of stimulating the supply of scrap, OPA chooses to add to the complexity of controls, to swell the ranks of OPA personnel and in effect to make a bad situation worse.

This nation will not emerge from its economic doldrums until Washington realizes that its academic experimentation with fancy theories is futile and that the thing to do for the good of everybody is to hand back industrial problems to the hard-boiled, practical industrialists who—despite their faults—do know how to get things done.

STEEL
September 16, 1946

TOO MUCH RED TAPE: An acute shortage of lead threatens to slow automobile production. Most motor car manufacturers have barely enough to carry them through September and at present the outlook for October is so alarming that the automobile industry has outlined the situation to Reconversion Director John Steelman in the hope that emergency steps can be taken to relieve this bottleneck.

The lead mess is complicated. Total United States demand on a restricted consumption basis is 80,000 tons a month. Domestic mine output is averaging under 30,000 tons per month. Of this total, 25 per cent goes to the Metals Reserve Corp. for allocation. Normally scrap lead comes into the market at the rate of 25,000 tons monthly, but this source has been almost dried up by OPA policies. Imports are disappointing, partly because the United States seems to have made a deal with Great Britain to restrict imports to 7500 tons monthly and also because Metals Reserve's purchases in world markets, even at prices above domestic ceilings, have proved ineffective to date.

Every source of lead—mine output, scrap and im-

(OVER)

ports—is strangled by government regulations, ranging from queer subsidies affecting mines, through intricate price nonsense to dubious "agreements" with foreign nations.

Obviously too many bureaus are working at cross purposes. Here is a spectacular opportunity for Mr. Steelman to cut some badly snarled government red tape. —p. 81

° ° °

NEW ASSEMBLY LINE: American Locomotive Co. has set up a new plant at Schenectady, N. Y., for the production of a new line of diesel-electric locomotives on a mass production basis. The locomotives are assembled from parts and subassemblies in four days. Previously assembly required two weeks.

It is somewhat lamentable, although fully understandable, that the advent of an assembly line in a locomotive shop is in connection with diesels instead of the traditional steam locomotives. Perhaps the precedent of mass production of internal combustion engines in the automobile and aircraft fields helped achieve for diesel locomotives a production technique that long was denied the steam units.

Interesting is the ratio of two diesel electrics to one steam locomotive on Alco domestic order books. Five locomotives are scheduled for shipment to Europe to every one ordered for domestic account. —p. 66

° ° °

BELATED IMPROVEMENT: From the standpoint of American industry, the more positive foreign policy which the United States government seems to be developing is all to the good. Recent conferences between representatives of the State Department and of other departments and agencies are beginning to show results. The address of Secretary of State Byrnes at Stuttgart at last provides a clearer outline of policy—one which will help our long-puzzled diplomatic and military officials in distant outposts all over the world to pursue their difficult jobs more intelligently and with greater confidence.

Eventually this more positive policy, if it continues to be developed along sound lines, will be of great importance to American manufacturers. Right now the opportunity for private enterprise to participate in the tremendous job of rebuilding the war-torn world is limited almost everywhere by diplomatic impasses. Only by pursuing a clear-cut and well-understood foreign policy that deals adequately with economic affairs, can this nation clear the way for industry to do the job of which it is capable. —p. 74

SIGNS OF THE TIMES: Expenditures for new plant and equipment planned by American business, exclusive of agriculture, for the third quarter of 1946 are estimated at $3.2 billion (p. 84), according to a survey conducted by Securities & Exchange Commission and Department of Commerce. Planned expenditures for the second quarter of 1946 were $2.9 billion and actual expenditures in the first quarter totaled $2.2 billion. . . . From southern California comes a warning that because metal trades industries on the Pacific Coast pay higher wages than those paid in any other industrial area in the country (p. 87), some eastern corporations which started with extensive expansion programs in California during and since the war have had to alter their original plans, confining operations to assembly rather than to production activities. . . . The Bureau of Mines has placed orders for equipment for a coal hydrogenation plant at Louisiana, Mo. (p. 76), designed to produce 200 barrels of synthetic liquid motor fuel daily. This contract, in conjunction with an earlier one for retorts for distilling oil from shale at Laramie, Wyo., constitutes a modest start in the development of synthetic motor fuel and shale oil industries in this country. . . . In testing forged rotor coil retainer rings for turbo-generators, Allis Chalmers Mfg. Co. not only exposes signs of weakness if such exist (p. 96) but also strengthens the rings by plastic deformation, which is a new and unique function of testing. . . . Labor turnover and absenteeism continue to plague management in the metalworking industries. Absenteeism for the Tuesday following Labor Day in the five passenger car manufacturing divisions of General Motors (p. 82) was 10 per cent —about double the average for this year and four times the rate prior to the war. . . . Numerous iron and steel products have been added to the positive list of commodities requiring licenses for export (p. 77) by the Office of International Trade, Department of Commerce. . . . Dr. R. E. Zimmerman, vice president of research and technology, United States Steel Corp., declares that "steel is firmly entrenched in the kitchen, laundry, bathroom and basement" of American homes (p. 78) and "is winning its way into dining and living rooms, bedrooms and sun rooms." . . . War Assets Administration has committed the faux pas of printing large runs of circulars for distribution in South America in Spanish (p. 77), apparently unaware of the fact that the language of the largest country, Brazil, is Portuguese.

E. L. Shaner

EDITOR-IN-CHIEF

ail Freight Car
nortage Acute

sis seen developing within next month as car-adings reach seasonal peak. Carriers have ,000 fewer cars than year ago

STEEL
September 16, 1946

First of an entirely new line of Alco-GE diesel-electric locomotives, and the 75,000th built by the American Locomotive Co., will make its debut to the railroad industry on the private siding of the Waldorf-Astoria in New York, Sept. 22. Two of the locomotive's three 2000 hp units are shown on a recent trial run. Other units in the line include a 4500 hp freight locomotive and a 1500 hp unit for road and switching service

ERICAN railroads dur-e next month will face greatest postwar traffic m. Demand for cars d-October is expected ch a seasonal peak of 000 weekly, while the s' capacity with pres-quipment is estimated 5,000 cars weekly. se forecasts, by the of Defense Transpor-indicate a backing up 000 to 75,000 cars of t weekly, unless the ds, shippers and re-s are able to work magic to avert the ened crisis.

lle the probable traffic mmediately ahead is cal point of shippers' st, the railroads are s more concerned with the long-roblem of rehabilitating their equip-badly deteriorated by extraordinar-vy traffic and limited replacements the war years.

job accomplished by the railroads the war is no longer news but still urce of pride to the carriers. Despite limitations on materials for equip-and repair, the railroads handled reatest mass movement of men and als in the history of mankind." the war ended, the carriers, with es bolstered by five years of un-y heavy traffic, hoped to modernize rehabilitate rolling stock. These nent programs, however, soon en-red serious obstacles.

he first place, strikes tied up plants cing materials needed for new car uction and repair. Steel and lum-ere especially short.

ond, wage increases in supplying ries increased costs of equipment beyond original estimates. Later, wage increases forced upon the railroads themselves increased operating costs.

Third, the freight rate increase allowed by the Interstate Commerce Commission in June was considered inadequate to compensate for the wage increases which the carriers had granted. The roads were given an average rate increase of 6½ per cent which was estimated to increase railroad revenues by $390 million annually, while the wage increase granted is costing about $800 million annually.

This to a large extent has nullified the heavy volume being moved by the carriers. During the first seven months of 1946, Class 1 railroads had an estimated net income, after interest and rentals, of $11 million, compared with a net income of $393 million in the corresponding period of 1945. The 1946 net income figures reflect carry-back tax credits taken by some roads. Without the carry-back credits the Class 1 railroads in the first seven months had a $42 million deficit.

The shortage in freight cars has been developing steadily but only now is it becoming actually acute. Car shortages existed in some areas in 1943 and 1944 while actually for the country as a whole there were car surpluses.

These apparent shortages resulted from a lag in the distribution of cars.

By the middle of June this year, the car shortage exceeded the surplus by 1500 cars. By mid-July, shortages exceeded surpluses by 5000 cars, and by mid-August, by 20,000 cars.

The railroads on Aug. 1 had 40,000 fewer serviceable railroad-owned cars than when the war ended. More than 80,000 cars are awaiting repair.

At the beginning of September, the Class 1 carriers had 57,378 new freight cars on order. During the first eight months of the year 27,703 new freight cars had been placed in service.

The situation in locomotives is less

critical than in cars, and in fact is less critical now than during the war. Railroads now are holding a greater percentage of locomotives in storage than during the war. However, many of these locomotives are old types whose efficiency is far below that of the modern locomotives and the roads are anxious to replace their older units as rapidly as possible.

Class 1 carriers, as of Aug. 1, had 604 new locomotives on order, and during the first seven months of the year had put 233 new locomotives in service. Of the latter, 66 were steam and 167 were diesel. New locomotives installed in the same period last year totaled 367, of which 56 were steam and 311 were diesel.

The railway car shortage has been accentuated since the war ended by several factors outside the control of the carriers. Major among these factors have been the postwar strikes which disrupted normal traffic. For example, the coal strike last spring made large numbers of coal cars idle for weeks; when the strike ended, a heavier burden was placed on the available cars to move the coal to points where it was urgently needed. With two months lost during the strike, the total requirements had to be moved in a shorter period.

Other strikes caused similar disruptions. The partial tieup of Great Lakes freighters in August caused a loss of time for cars carrying ore and coal. The truckers' strike in New York caused some cars to be tied up there. The maritime strike necessitated a ban on freight car loadings for seaports.

Labor troubles also are to some extent nullifying the 7-point program ordered by Reconversion Director Steelman, in co-operation with other federal agencies, to avert the autumn transportation crisis.

One of the points in its program called for the diversion of cross-country traffic from rails to ships, for coastwise or intercoastal shipping. The War Shipping Administration and the Maritime Commission were called upon to make more vessels available for such shipments, and the Office of Price Administration ordered to give relief for any increase in costs resulting from the diversion. The maritime strike effectively blocked such action.

Shortening of the turn-around time for cars is one of the chief means by which it is hoped to ease the car shortage. The Office of Defense Transportation, the Association of American Railroads and the National Association of Shippers Advisory Boards have appealed to shippers and receivers to step up their loading and unloading operations and to keep shipping departments on a 6 or 7-day week. Considerable relief is resulting from these efforts, but shippers report men in shipping departments are reluctant to work the extra days. And, of course, costs are increased materially by the necessity of paying such workers premium rates.

As the railroads view it, their immediate problem is to do the best they can with what equipment they have. They will depend largely on expeditious handling, by speeding up repair of bad order cars and reducing the turn-around time.

For the longer pull, they hope for freight rate relief to put them in better earning position to finance a fairly large program of equipment modernization.

Means of keeping essential supplies moving during the truckers' strike in New York was advocated at this meeting of union leaders, employers and mediation officials. At head of conference table is Mayor William O'Dwyer. NEA photo

Assembly Line Locomotive Output Started by Alco

American Locomotive Co., Schenectady, N. Y., has set up a new plant for the production of an entirely new line of diesel-electric locomotives on a mass production basis. The locomotives are assembled from parts and subassemblies in 4 days as compared with 2 weeks previously.

The new line includes 2000 and 1500 hp units for passenger, freight and switcher service. A 3-unit, 6000 hp locomotive has just been completed and will go into service shortly on the Santa Fe.

During the war the American Locomotive Co. operated several new plant buildings for the Ordnance Department for the production of tanks and guns. These have been purchased from the government, stripped of their wartime equipment and re-equipped with entirely new machine tools, heat-treating furnaces, welders, and the like, for production of diesel engine parts, underframes, side frames, roof sections, etc. Engines, sections and subassemblies t to the 230,000 sq ft erecting shop final assembly. Production sched call for one complete unit per day Jan. 1 and 3 a day by July 1, 1947.

Railroad diesel engine production been transferred from the McInt Seymour Division at Auburn, N. Y. Schenectady. Wearing parts of the cylinder and 12-cylinder engines are terchangeable. Both engines are of cycle, V-type design with 9-in. bore 10½-in. stroke. Electrical compone including motors, generators, swit gear and the like, are built by the G eral Electric Co.

Alco now is producing 2½ steam lo motives to one diesel electric, incl ing exports. Domestically, product is in the ratio of 2 diesel electrics t steam locomotive. Order backlog steam locomotives extends through th quarter of 1947 and for diesel-electr well into 1948. Employment now 8000, against a war peak of 13,000 a 1300 on Oct. 1, 1940.

Holds Lower Costs Result From Diesel Power Usage

Use of diesel power can be a mater aid to lowering production costs, in opinion of Gordon Lefebvre, presid and general manager, Cooper-Besse Corp., Mt. Vernon, O. Citing impro ments in the operating efficiency of die engines as a result of war experience research, Mr. Lefebvre said that th improvements will make possible v savings in power production, rail, wa and road transportation, and industr uses such as dredges, compressors, bu dozers, etc.

Vage Stabilization Faces Test

WSB holds increases to maritime workers must remain within established pattern. Coal miners and operators discuss return of mines to private owners

TRANSPORT strikes which virtually alyzed America's sea-borne commerce, ously disrupted internal transporta-, and caused a large loss of employ-nt and inconvenience in New York city d the labor spotlight last week.

he future of the already weakened ge stabilization program was at stake he strike of two American Federation Labor maritime unions to protest inst a ruling of the Wage Stabiliza- Board that wage increases for mari- workers must be held within the ts of established rates and disallowing eases which had been agreed upon ship operators and the AFL unions. Wednesday, the WSB reaffirmed its d against the increases given AFL ns and ruled in effect that these uld be "rolled back." The AFL mari- workers threatened to continue strike "to the bitter end" and late in week the dispute appeared to be ling for the White House.

he paralysis of shipping had caused embargo to be placed on nearly all shipments to salt water ports. Supply to American troops abroad were red. The flow of raw materials and r imports from abroad became a le.

New York city a strike by truckers, anding a 30 per cent wage increase, d the flow of food and supplies. y industrial plants in the area were d to close down when their supplies w materials ran out. Tens of thou-s of workers were laid off.

Communistic Elements Accused

ayor William O'Dwyer of New York sed Communist elements of stirring he rank and file of truck drivers to t against their leaders and prevent ment of the dispute. Late in the Daniel J. Tobin, president of the teamsters union, ordered 10,000 pathizing workers not involved in act negotiations to abide by their acts and return to work.

Washington, coal mine operators with John L. Lewis of the United Workers and government officials n attempt to evolve a settlement r which the coal mines could be ned to the private owners. Adm. Moreell, coal mines administrator, sed as "a basis for discussion" he new agreement include the wage paid by the government, which are a day over the 1945 contract. Mr. Lewis then asked the operators to "make an offer" and indicated that the miners had no concrete proposals at present.

Elsewhere on the industrial front strikes were taking their toll of production.

At Detroit, the Dodge Truck plant of Chrysler Corp. was closed when the UAW picketed the plant in protest to a one-day layoff of 700 workers necessitated by a shortage of steering gears. Strike was settled later in the week.

Hudson Motor Car Co. assembly lines were closed temporarily and 12,000 made idle by a strike of 37 inspectors who demanded an increase of 5 cents an hour.

Main plant Timken-Detroit Axle Co. suspended operations when UAW struck in protest against disciplinary action against 30 employees.

Republic Steel Corp. at Cleveland, suffered a loss in production when about 50 men walked off the job in the open hearth department in protest against disciplinary action resulting from refusal of a crew to make up the bottom of an open hearth.

Employment Average Rises In Steel Industry in July

Employment average in the iron and steel industry was higher in July than in any month since December, 1943. The July average, according to the American Iron & Steel Institute, was 585,100 persons, compared with 578,000 in June and 604,730 in December, 1943.

Also up in July were the industry's total payrolls, average hours per week of wage earners, and average earnings per hour of wage earners.

Total payroll for July was $137,988,900, compared with $125,589,900 in June; average hours per week of wage earners increased to 36.9 hours in July, compared with 34.6 hours in June; and average earnings per hour of hourly, piecework and tonnage workers was 135.1 cents an hour in July, compared with 134.4 cents an hour in June.

Present, Past and Pending

■ CLOSING OF BIDS ON BLAST FURNACE PLANT DELAYED

CHICAGO—To allow new bidders time to prepare bids, the War Assets Administration again has postponed closing of bids on the $34 million surplus government-owned blast furnace plant at East Chicago, operated during the war by Inland Steel Co. Closing date now is Oct. 15.

■ TEXAS BLAST FURNACE MAY BE REOPENED SOON

DAINGERFIELD, TEX.—Lone Star Steel Co. expects to reopen soon the 1250-ton blast furnace at its $25 million plant here. Because of "abnormal conditions" a premium price on pig iron would be necessary for operation of the furnace, the company says.

■ PROPOSALS FOR ENDING CANADIAN STRIKE REJECTED

TORONTO, ONT.—Canadian steelworkers last week rejected government proposals for settlement of the steel industry strike. Union officials said their acceptance of any wage formula would have to be conditional upon prior acceptance by the companies of arbitration on nonwage issues.

■ GOVERNMENT BLAST FURNACE TO BE RELIGHTED

BIRMINGHAM—Operation of the government-owned 1000-ton blast furnace adjoining the Republic Steel Corp. plant at Gadsden, Ala., is to be resumed immediately under government subsidy of $8 a ton.

■ $11 MILLION NATURAL GAS LINE APPROVED

ST. LOUIS—The Federal Power Commission has authorized the Mississippi River Fuel Corp. to construct a $11,574,000 natural gas line between Monroe, La., and St. Louis to increase the latter's natural gas supply by 40 per cent.

■ CONTINUOUS TERNE PLATE COATING LINE PLANNED

PITTSBURGH—Carnegie-Illinois Steel Corp. has awarded Aetna-Standard Engineering Co., Youngstown, a contract for a 48-in. continuous strip terne plate coating line for Carnegie's works at Gary, Ind. The new unit will enable the company to ship terne plate in coils of considerable length.

■ BRASS MILL COMMITTEE "STRIKES" AGAINST OPA

WASHINGTON—Brass Mill Industry Advisory Committee adjourned its meeting here last week and abandoned future meetings "until government ends its pricing inaction on urgently needed raw material." The committee claimed it is unable to get necessary raw materials because Office of Price Administration ceilings are too low for the suppliers.

Impasse in Scrap Held Unrelieved

Trade views latest government moves as discouraging flow of material. OPA's denial of general price increase dismays dealers. Inventory controls seen difficult to enforce. Bartering prohibited

SOLUTION of the steel scrap supply problem seemed farther away than ever last week following joint action of the Office of Price Administration and the Civilian Production Administration denying a general price increase and establishing new inventory, trading and consumption regulations designed to spur the movement of scrap in normal channels.

The 6-point program, aimed at halting hoarding, was viewed in trade circles as only contributing to the confusion and the consensus was that, if anything, the situation would worsen.

Chief disappointment to the trade was the failure of OPA to heed the advice of its Scrap Industry Advisory Committee to grant a general price increase to offset accumulated cost boosts over the past several years. Scrap prices have been held frozen since the beginning of the war. Further, the view was expressed in the trade that the new inventory and trading regulations would be impossible to enforce and would not stimulate the flow of material. Granting of an incentive increase averaging $4 per ton on cast scrap, however, was seen as likely to spur movement of these grades.

Program Termed "Final Decision"

The OPA program to relieve the present acute scrap shortage was termed by OPA Administrator Porter his "final decision" to end the long controversy of scrap ceiling prices that has virtually halted trading in scrap.

New Civilian Production Administration regulations to implement the program will be designed to bring about full scale resumption of normal scrap circulation. It was indicated that the new CPA regulations will require processors of scrap to balance shipments with receipts.

Inventory control is not expected to become effective for at least a week or ten days, at which time CPA will issue a directive. However, talk in Washington last week was to the effect it is possible such a directive may not be necessary, depending upon the degree of co-operation on the part of the scrap dealers in balancing receipts with shipments.

The incentive increase for prepared grades of cast iron scrap comprising 10 to 15 per cent of the total iron and steel scrap supply will average slightly less than $4 per gross ton and is the only price increase provided in the program. Mr. Porter made it clear no general increase in scrap prices may be expected.

The new cast scrap ceiling price schedule, which became effective Sept. 11, is as follows:

Grades	*Zone A	*Zone B	*Zone C
Cast No. 1	$23.00	$24.00	$25.00
Cast No. 2	19.00	20.00	21.00
Cast No. 3	18.00	19.00	20.00
Cast No. 4	15.75	16.75	17.75
Cast brake shoes	15.75	16.75	17.75
Stove plate	21.00	22.00	23.00
Clean auto cast	25.00	26.00	27.00
Motor blocks, unstripped	18.00	19.00	20.00
Wheels No. 1	20.00	21.00	22.00
Malleable	22.00	23.00	24.00

* Zone A includes: Montana, Idaho, Wyoming, Nevada, Utah, Arizona and New Mexico. Zone B includes: North Dakota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas and Florida. Zone C includes: All other states including the switching district of Kansas City, Mo.

Other phases of the program:

(1) Establishes ceiling price for the first time on sales of unprepared scra scrap dealers from industrial or ernment sources. These new ce are the levels as formerly applied to of similar materials to consumer their brokers which will give de a basic gross margin of $3.50 per net the difference between the new ce prices for unprepared scrap and for n ber one heavy melting steel, the l grade of prepared scrap.

(2) Reduces ceiling price on sale unprepared scrap to consumers or brokers 50 cents per ton which dealers a differential to insure the of scrap through this normal channel

(3) Prohibits the purchase or sal scrap on the condition that the b deliver to the seller any other commo widely practiced recently. These "ti sales—the trading of other scarce terials such as pig iron and new steel iron and steel scrap—have slowed d the flow of scrap and diverted it f normal channels.

(4) Prohibits sale of electric fur and foundry grades of scrap at prem prices for use in basic open-hearth naces unless the scrap has been alloc by CPA.

(5) Provides incentive increases r ing from $2.50 to $7 per gross ton in maximum price for prepared grade cast iron scrap. The increase should courage collection of this type s which may be used as a substitute terial for pig iron which is in short ply.

(6) The increased OPA staff of pert graders assigned to scrap will lau a drive for criminal prosecution in propriate cases of violators of OPA gulations.

Holds Higher Prices Unwarranted

"The decision that no general incre in ceiling prices of scrap is warran was reached only after the most car consideration of all factors involved cluding the recommendation of the C Industry Advisory Committee for s that a general increase should granted," Mr. Porter said. "I want make it clear, however, that the d sion is final and I am relying to a la extent upon the co-operation of the C lian Production Administration in hold scrap inventories down to legal lim Any general increase in steel scrap pr should be largely a bonus for speculat

"OPA study shows that the commi in recommending the price increase influenced largely by other consid

VALUABLE DUST

A forgotten pile of flue dust containing a substantial amount of iron has made the Milwaukee city government several thousand dollars richer, thanks to today's scrap iron scarcity.

Offered $10 by a scrap dealer who wanted the dust pile on Jones island, the Milwaukee port director became mildly interested in the value of the dust. Immediately he ordered harbor commission workers to cease using the dust for road repair materials.

In his investigation, the port director found that the flue dust, 990 tons of it, had come years ago from blast furnaces operated on Jones island by the Illinois Steel Co.

Soon the port director had another offer, this one for $200, for the dust. Thoroughly interested by this time in the pecuniary value of the dust, the port director asked the city purchasing agent to advertise for bids on it. When the bids were opened the top offer was $3325.

s than increasing the flow of scrap
n as the practice of trading new steel
scrap. Such trading is now being
hibited. Moreover, the committee's
ice was followed in imposing ceilings
n sales of unprepared scrap to dealers
the fixing of a differential between
e sales and those to consumers."

n addition OPA said that no signi-
nt increase in the flow of scrap would
lt from a general price increase.

he agency explained that bidding up
nprepared scrap by speculators and
e desiring to trade in it for new
l has resulted in such high unpre-
d scrap prices that legitimate margins
wed scrap dealers to cover their prep-
ion costs have been cut greatly and
ome cases wiped out. It is recog-
d, OPA said, that abuses have not
n carried on by the entire industry.
eover, those members of the indus-
who have been complying with gov-
nent regulations and helping maintain
stabilization program have been in-
l by their competitors' abuses.

ne ban on use of electric furnace and
dry grades by basic open hearth
umers is designed to end a major
e of upgrading. It restores a war-
control that was removed soon after
Day to permit freer movement of
. Since basic open hearths do not
ire scrap prepared to these specifi-
ns their purchasing of these grades
ed to indirect violations of price ceil-
by payment of premiums, OPA said.

r. Porter explained that the only
ase in ceiling prices granted un-
he new program is designed to in-
e the flow of cast iron grades of
, the use of which is limited largely
undries.

esultant increased costs should be
than offset by increased substitution
rap for more expensive pig iron,"
Porter said.

e price increase should bring out
cast scrap by increasing the small
lers' operating margin.

ally, the exercise of inventory con-
y CPA is part of the government's
am to halt hoarding and correct
stribution of scrap supplies.

der the CPA program shipbreak-
ctivities will be speeded up. It is
stood the War Assets Administra-
will take bids about Sept. 17 (ten-
date) for the leasing of 12 ship-
to be used for shipbreaking. These
, it is understood, are located in the
River area, the Mobile Bay area,
an Francisco Bay area. At the same
he Maritime Commission is prepar-
list of 110 ships to be sold for scrap.
vessels are in addition to the 106
ed of for this purpose some time

August Steel Output Pace Sets New Postwar Production Record

PRODUCTION of steel ingots and steel for castings during August set a postwar record with output rising 285,797 tons over the preceding month to 6,895,465 net tons, American Iron & Steel Institute reported last week.

The previous high since the end of the war was reached in July of this year with production of 6,609,668 tons, according to revised figures. One year ago production for August was 5,735,317 net tons.

Steel ingot production has increased steadily since May when the industry operated at 52.2 per cent of capacity, turning out 4,072,452 tons. Operations are at the highest level since May of last year, production during August being at an average rate of 88.3 per cent of capacity compared with 84.9 per cent in July and 70.7 per cent during August, 1945.

Last month's output consisted of 6,261,941 tons produced in open hearths, 373,819 tons in bessemer furnaces, and 259,705 in electric furnaces.

Production of steel ingots in the first eight months of this year totaled 40,834,287 net tons which compares with 55,863,970 in the like period of 1945. In the first six months of this year, production was 15,813,928 tons behind that of 1945, the loss being due to plant shutdowns occasioned by strikes and work stoppages in the steel and coal industries. Due to the accelerated production in July and August some of the first half-year's loss has been recouped. Should the August production rate be maintained through the remainder of the year, 1946 production should total over 68 million tons, a record peacetime year if 1941 is excluded.

$1 Million Steel Foundry Offered for Sale by WAA

A million dollar steel foundry in Easton, Pa., operated during the war by Lehigh Foundries Inc., for the production of mortar shells, has been declared surplus and is offered for sale or lease by War Assets Administration. Machinery and equipment on the site include melting and annealing furnaces, compressors, ovens, cranes, and sand handling equipment. Machine tools, including milling machines, presses, lathes and grinders, also are available.

Supply Shortages Preventing Full-Scale Production by Electrical Manufacturers

FULL SCALE production in the electrical manufacturing industry has been postponed for at least another six months and probably longer as a result of shortages of various materials, the National Electrical Manufacturers Association reports following a survey of 100 member companies.

Production of small motors is running about 50 to 80 per cent of capacity in various plants due principally to these shortages. One manufacturer of transformers estimates it will be a full year before copper supply will be fully adequate. Other shortages exist in lead, natural rubber, cotton yarns and cotton sheetings.

Shortages are especially marked in the production of materials needed in the housing field, such as electric wiring, and so forth.

In reply to the Association's questionnaire, one wire manufacturer said that in some lines production could be increased by as much as 40 per cent if the necessary cotton yarns and sheetings were available and that in lead cables production could be stepped up 100 per cent if sufficient lead were to be had.

On the labor situation, the majority of companies declared that labor efficiency was below that of 1941, in some cases running as low as 65 per cent of prewar standard. This was ascribed to a variety of factors. One of the factors cited was that working forces are being increased in many plants and considerable time and effort must be devoted to training new workers. Another factor has been the high turnover of veterans.

Reports from the larger cities stated that the unemployment insurance system was one important factor in keeping women from taking jobs at this time.

Although most companies in the fractional horsepower field are producing far in excess of their 1941 rate because of wartime expansion, such motors remain on the critical list because of the unprecedented peacetime demand.

Iron & Steel Board Members Named; Modernization Program To Proceed

Some observers believe industry will not be nationalized, but that government will exert control through new board, which will supervise development programs, prices, provision of raw materials, production, distribution and imports

LONDON

APPOINTMENT of members of the Iron & Steel Board, which will review and supervise programs for the development and modernization of the industry, prices and other problems, is expected to resolve a deadlock that has gripped the British steel industry since the Labor government announced its nationalization plans in mid-April.

The new board will not advise the government on how nationalization policies are to be carried out. In fact, many observers now believe it is extremely probable the industry will not be nationalized, but will continue to be operated by the various companies. They believe the British Iron & Steel Federation will preserve its autonomy. However, control by the government will be much greater than before the war and this control likely will be effected through the new board.

Naming of the board members is expected to be followed by intense activity in modernization and re-equipment of iron and steel plants along the lines suggested in the Iron & Steel Federation's report, submitted some nine months ago.

Forbes Named Chairman

Chairman of the Iron & Steel Board will be Sir Archibald Forbes, managing director of Spillers Ltd. He will be released from his duties with Spillers to devote his whole time to the board. His salary will be £8500.

His colleagues on the board, who will receive £1000 annually for part-time services, will be: Sir Alan Barlow, a joint second secretary of the Treasury since 1942; A. Callighan, secretary of the National Union of Blast Furnacemen, ore miners, coke workers and kindred trades; Lincoln Evans, secretary of the Iron and Steel Trades Confederation; G. H. Latham, chairman of the Whitehead Iron & Steel Co. Ltd., and president-elect of the British Iron & Steel Federation; and Richard Mather, chairman of the Skinningrove Iron Co. Ltd. An additional member, with experience in general industry, will be announced later.

The duties of the board, as announced by the government, will be:

1. To review and supervise programs of development needed for the modernization of the iron and steel industry and to watch over the execution of approved schemes in such programs.

2. To supervise as necessary the industry in current matters, including the provision of its raw material requirements, and the administration, under powers delegated by the minister, of such continued direct control as may be required over the production, distribution, and import of iron and steel products.

3. To advise on general price policy for the industry and on the fixing of prices for controlled products.

Although demand for steel is still increasing, production in Britain is decreasing. In May average weekly output was 261,800 tons; in June it fell to 239,800 tons and in July 226,000 tons. With August a holiday month it is doubtful whether any improvement will be seen when figures are disclosed. Pig iron production in July was only at a weekly rate of 147,000 tons, as compared with a weekly rate in the three months ended June of 150,500 tons.

Total exports of iron and steel from Britain in July were 236,358 tons, compared with 77,438 tons in the same month last year. In the first seven months of 1946 the total was 1,448,927 tons, compared with 234,680 tons in the period of 1945. Chief items among ports in July this year were rails, 8 tons; wrought tubes, 25,160 tons; sh 30,117; and steel bars, 26,061 tons. E re-rollers are using re-rolled steel increasing extent and could abso much larger tonnage if it were avai In July 19,006 tons of semifinished brought in, and in addition Britain ported 1355 tons of steel ingots and tons of pig iron.

A further shrinkage in coal o may have the effect of reducing steel put next winter. All steelworks backlogs. Export quotas have been and producers are hesitant about ac ing further new business. Distrib of all coal supplies is subject to go ment direction and steelworks are allowed to exceed their fixed qu Pressure for deliveries from shipy engineering shops, locomotive and fr car works has been intensified. duction of pig iron suitable for the castings industry is no more than ficient to meet the needs of the castings industry, but it is recogn that the potential capacity of the fou industry is not being used becaus a shortage of skilled labor.

In the Welsh tin plate trade there heavy demand but only about 30 cent of the output is being shipped seas. A small number of mills w have been lying idle have been rest but the obstacle to bringing more commission is the acute shortage labor. Supplies of steel bars and to the industry are sufficient to the needs. The bulk of the current put of tin plate in Wales is being in connection with the packing of f stuffs. The demand for black and g nized sheets continues extremely he

France To Abandon Industrial Subsidization Policy Gradually

PARIS

GRADUAL abandonment of government subsidization of business and industry will be a policy of France, the Ministry of National Economy has announced.

In foodstuffs, only bread and milk will continue to be subsidized and, in fact, the bread subsidy will be compensated by an increase in the price of gasoline by higher taxation. As regards industrial subsidies, only imports will continue to receive financial assistance from government funds; the existing subsidies to the iron and steel industry will be gradually reduced and will be terminated by the end of the year.

Prices of certain industrial prod are still low in relation to the gen level, aluminum, for instance. On other hand, certain high prices are be ning to come down, as has recently b the case for textiles. A new metho controlling prices is to be applied; trols will apply to all products wi certain categories, all products wi one category being affected at the s time. This has been done already hardware goods. It is also proposed establish distribution or allocation c mittees which will investigate the me of bringing back more healthy condit in commercial transactions.

Imports of coal into France rose

ROTEST YUGOSLAV CARGO: Crated Ford mobile shop units lie idle n a lighter in New York after stevedores refused to handle them, stating e machinery was bound for Yugoslavia. The men protested against send- ng supplies to Yugoslavia, said they should go to Greece. NEA photo

ly during July, with a tonnage of ,973 tons against 572,348 tons in July imports include 537,327 tons the United States. Receipts from any have also improved, amounting 4,674 tons from the Ruhr and the It is the first time since March he figure of 300,000 tons has been ded; it is due to the delivery, some- delayed, of 77,200 tons lent by merican and British authorities in and originating from their stocks in any. Coal imports from Poland in mounted to 104,234 tons; an agree- was signed with Poland on Aug. 1 ng a monthly supply of 100,000 f coal.

interesting situation has developed ard to coal imports from the United . The tonnage of 537,327 tons ly compares with 116,904 tons in The allocation of American coal he European Coal Committee .) is 525,000 tons per month; this e is believed to be within the y of the United States to export hat the coal mines are producing lly. Certain European nations are ble to take up their quota because high cost of American coal; this in a substantial tonnage being ble and offered outside regular tions. It is therefore possible for to supplement her needs, but her m is not only one of quantity but e of quality or grade. There would point in trying to reach the pre-war tonnage of imports, amounting to 1,800,000 tons, if the grades of coal imported did not complement those available from the French coal mines. To import coal that is not suitable to French requirements would be wasting foreign exchange. It is therefore probable that in the near future French importers will be directed to purchase certain specified grades of coal only, particularly coking coal.

Improvement in the output of iron and steel is continuing. Nine blast furnaces have been blown in since June 1, and 46 furnaces were in operation at the end of July. The output of pig iron has risen from 264,000 tons in June to 304,000 tons in July. Production of steel ingots and castings has also jumped from 343,000 tons to 377,000 tons, and the output of rolled products from 238,000 tons to 250,000 tons.

Another indication of revival in industry is the increase of coal output in the week Aug. 4-10, to 960,966 tons against 949,113 tons in the preceding week. During the same period imports of coal were 220,175 tons against 201,310 tons in the previous week.

Czechoslovakia

Despite still short supplies of iron ore, which is not of prewar quality, and irregular coke deliveries, the output of iron and steel in Czechoslovakia is steadily increasing, thanks partly to good supplies of scrap. The output of pig iron for the first six months of this year was 424,848 metric tons (806,663 tons in the first six months of 1937); the production of steel ingots was 795,620 metric tons (1,103,151 tons).

The Witkowice works, near the border of Poland, suffered little damage during the war, and is now producing at prewar capacity, which is equivalent to 40 per cent of the total capacity of the country. This works is reported to operate the largest steam hammer in Europe, capable of forging blocks of 150 tons.

Germany

Larger supplies of coal and coke have caused an increase of the output of steel in the zone occupied by the British, the output in July being 210,321 tons, as compared to 177,000 tons in June. The July output is the highest recorded so far.

Italy

Monthly output of steel in Italy is at present estimated at 53,000 tons, comprising 27,000 tons of open-hearth steel and 26,000 tons of electric steel. Italian shipbuilders are anxious to place orders for ship plates from foreign makers owing to the existing scarcity of these products in the home market.

Government To Permit Rail Shipment to Yugoslavia

WASHINGTON

Government officials last week made it clear they planned no interference with projected shipments of materials from this country to Yugoslavia by UNRRA, including 7458 tons of steel rails, despite protestations of Senator Bridges (R., N.H.) and Joseph P. Ryan, president, AFL Longshoremen's Union.

The union has refused to load relief vessels destined for Yugoslavia until "proper action is taken against those responsible for shooting down" two American planes in that country with loss of life last month.

On the question of the steel rails, which Senator Bridges said were valued at $450,000 and had been diverted from shipment to China, UNRRA and the State Department said that about seven weeks ago UNRRA Director General LaGuardia ordered an embargo on all relief shipments to China except foodstuffs, on grounds that the Chinese ports were badly congested and could not handle the supplies. At that time 18,600 tons of steel rails earmarked for China were ready in New York for shipment. Rather than pay storage on them, the rails were allocated to Yugoslavia.

Tumble in Stock Market Studied For Hint of Industrial Trend

Machine tool executives follow security market developments for effect on tool demand. Industrial contraction not reflected in sales. Interest in labor-saving equipment continuing at high level

CLEVELAND

COMPANIES in the machine tool industry are watching developments in the security markets closely since the downtrend there may forecast a contraction of industrial expansion in the near future. There has been no indication yet, however, of a reduction in demand for machine tools.

There is ample display of interest in labor-saving machinery and new firm orders are holding at a satisfactory level. During the last five months for which figures are available, unfilled orders have increased steadily and now total about $185 million. The order backlog this year has included foreign business which has consistently accounted for slightly under 30 per cent of the total. There has been no appreciable increase in cancellations, which would be one of the first signs of retrenchment in appropriations for expansion and modernization programs.

Shortages Hamper Industry

The industry is still hampered in its efforts to increase operations by serious shortages and is encountering rising costs as completion of work-in-process is delayed and costly substitutes of certain materials and components must be made. Producers are accepting delivery of any type of motor that can be found rather than await delivery of motors complying strictly with specifications. Some improvement has been noted in delivery of the larger sized motors but those of motors under 5 horsepower and fractional motors are far behind schedule. Other serious shortages are reported in clutches, centrifugal and hydraulic pumps, and bearings, although delivery of the latter have improved lately.

Malleable iron pipe fittings, such as ½-inch elbows, are especially scarce and hampering the completion of many orders. Shipments from some suppliers are as much as 12 to 14 months behind schedule. Improvement in the availability of this component may be delayed for several months, since the industry understands that plans have been made by the government to channel available supplies of fittings into the housing program.

Shortage of steel also continues critical with many machine tool builders buying substitute materials which often increase costs substantially. Hot-rolled bar stock, for instance, cannot be obtained in sufficient quantities to meet requirements, requiring the purchase of higher-priced cold finished material. Alloy steel is in comparatively free supply.

Automotive Buying Lag Felt In New England Tool Market

Boston—Slack in new orders for machine tools is marked by the absence of buying by the automotive industry. Few machines have been bought for potential model changes expected during first half of next year, although considerable equipment will be required.

Foreign inquiry is heavy and several large lists for export are being estimated.

Shipments with some shops are in excess of bookings, but deliveries on numerous metalworking tools are still extended 16 to 18 weeks; backlogs still substantial but are being reduced slowly in some cases.

Offerings of surplus machines are heavy in New England and the East. This has unquestionably affected new sales of standard tools, more so than of special equipment. However, some types of machines, internal centerless grinders to name one, are becoming scarce in surplus.

General Electric Co. is planning purchase of considerable new machinery for the Bridgeport, Conn., washing machine plant.

Tool Production Retarded by Supply, Component Shortages

Pittsburgh — Scarcity of steel, components and skilled mechanics continue to retard machine tool output. Some improvement in production has been noted recently, however, and further increase is expected through the remainder of the year.

Industry's order backlogs are extended six months and more on special grinders, hydraulic planers, shapers and slotters; lathes generally are available within four months, while deliveries on hack saws and small hydraulic assembly presses

FATIGUE TESTER: General Electric's pneumatic fatigue-testing machine, which is used to vibrate metals and alloys at their natural frequencies until they crack or break under the stress and strain is demonstrated here by F. B. Quinlan, engineer in the Schenectady works laboratory. Here the engineer is watching the vibration of a piece of steel through the attached optical system

omised within two to three weeks.
roved system of registering avail-
quipment has speeded up redistri-
of surplus items at WAA sales.
e volume of industrial equipment
ly is available to the general pub-

sales now being sponsored by
include: Machine tools, produc-
d electrical equipment at Cleve-
Pneumatic Aero Inc., Cleveland,
at $15 million; machine tools and
tion equipment at Quigley Avenue
use, Cleveland, $25 million; hand
ffice and shop equipment, Good-
re & Rubber Co., Akron, O., $7.5
; steel, aluminum, shop equip-
nd machine tools, Army warehouse
, Warren, O., $15 million; Army
Lordstown, O., machine tools,
tion equipment and hardware, $25
machine tools, production equip-
three warehouses at Toledo, O.,
llion; commercial diamonds, scales,
e tools and production equipment,
bomber plant, Cleveland, valued
nillion. The latter sale will not be
non-priority buyers until Oct. 1.

rate Improvements Noted
ol Deliveries

Louis — Moderate improvement
es in deliveries of small standard
e tools. Some lathes are obtain-
30 to 60 days, and shapers 2 to
hs. Large lathes range from 3
onths, but punch and drill press
es may be a year or more late.
improvement in cheaper tool
ies is expected from now until
l of this year.

nd for new and used tools con-
brisk. Cream of standard ma-
has already been taken from war
urpluses here, and a number of
y tools have been pulled back
les or frozen indefinitely.

ine tool distributors here report
motors still are the worst bar-
Many are being queried as to
they will accept delivery with-
tors, and some are being shipped
condition.

Toolmaker Reported
g Down Russian Order

ington — A Russian order for
n tools reportedly amounting to
ion (with deliveries to be spread
10-year period) has been turned
by a Swiss manufacturer along
offer that the plant capacity be
bled at the expense of the Rus-
ccording to the Department of
rce.

Some Bolt Producers Oversold on Basis of Steel Supply in Sight

BOLT and nut manufacturers are heavily booked ahead. Some makers assert they are oversold for the remainder of this year, on the basis of steel in prospect, by as much as 50 per cent, and it is believed in some quarters, that this situation is not far from average for the industry as a whole.

Meanwhile, in view of this situation bolt and nut producers are trying to avoid making new commitments beyond the end of the year. In the case of certain car construction and some programs of similar character, makers are promising some tonnage, but in general they are turning down orders for next year until they can digest some of the work already on their books.

Principal stringency is in the small assembly items. On the other hand, heavy structural rivets are in fairly easy supply, reflecting the decline in non-housing construction; and shipyard rivets, are a virtual drug on the market, because of the sharp decline in ship construction. In certain cases these ship rivets have recently been loaded on cars and sold for scrap.

Contributing to the relatively easy situation in structural rivets is not only the drop in non-housing construction, but the sizable quantities that are still being offered from government surplus.

Demand for nuts, bolts and rivets for pre-fabricated work has been so heavy of late that makers have been forced to turn down substantial tonnages, as they have been unable to meet the deliveries desired. So far as can be learned bolt and nut makers have not become extensively involved in ratings, applying to the housing program, and in support of this belief steel producers assert that they have received little in the way of CC rated orders from the bolt and nut industry.

Export shipments were recently brought to a standstill by the Maritime strike, and with rail embargoes on export shipments, various bolt and nut makers had a substantial accumulation of material on their loading platforms.

GOVERNMENT CONTROL DIGEST

OFFICE OF PRICE ADMINISTRATION

Jobbing Shop Operations: Effective Sept. 5, any jobbing shop operation formerly covered by OPA's industrial services regulation (MPR-581) is suspended from price control unless it consists "entirely or principally" of abrading, assembling, cutting, forming, grinding, machining, shaping or welding. "Principally" as it applies in this case means more than 50 per cent of the total operation's cost based on the seller's June 30, 1946, maximum price. All repair and maintenance services under this regulation, regardless of the nature of the work, are also suspended. (SO-129; OPA-T-4977)

Scrap: Sales of prepared iron and steel scrap to dealers by government agencies have been placed under price control, effective Sept. 16. Sales by government agencies of unprepared iron and steel scrap and all other scrap metals to dealers remain exempt. (SO-94)

CIVILIAN PRODUCTION ADMINISTRATION

Tin Plate: An additional 15 per cent of tin mill production which formerly was channeled to the manufacture of cans and closures for perishable foods and a few other urgent items has been freed, effective Sept. 30. Only 70 per cent of tin mill output must go into the production of the essential products listed in group A, compared with a former restriction requiring 85 per cent of tin mill production for such use. (M-21; CPA-LD-252)

Building Materials: "HH" and "HHH" priority rated orders for iron and steel building materials have been exempted from the emergency suspension of iron and steel ratings. Previously, only "AAA" rated orders were exempt from direction 13 to priorities regulation 1 which, in general, suspends until Sept. 30 all rated orders for iron and steel items.

The direction was further amended to provide that all "HH" and "HHH" rated orders for any iron or steel item listed on schedule A of priorities regulation 33 remain in effect. However, the "HH" and "HHH" rated orders for some of these schedule A items may not be served on producers.

Metal window sash and frames have been restored to the list of materials for which "HH" rated orders may be granted.

CPA Appeals Board will not hear any appeals on construction applications filed with it requesting relief from Veterans' Housing Program order No. 1 or from administrative action taken under that order. (PR-1 and 16; CPA-547).

RFC Metals: New priorities regulation, No. 34, sets forth procedures under which eligible purchasers may obtain metals, minerals and other materials held by Reconstruction Finance Corp. Metals covered by the regulation include in part: Aluminum, antimony, beryl, bismuth metal and alloys, cadmium metal and scrap, chromite, copper, lead and manganese. (PR-34)

Construction Items: Producers of new items, such as aluminum window frames, etc., used in industrially made houses, sections or panels, are eligible for priority assistance if they are attempting to increase production sufficiently to earn premium payments or to carry out production agreements made with the housing expediter. This assistance may be used to obtain not only an item of production material and capital equipment but also maintenance, repair and operating supplies or material for construction. (PR-28; CPA-548)

Pig Iron: Certification plan which aided manufacturers of housing products and railroad brakeshoes in obtaining pig iron during the third quarter of 1946 will be continued for the balance of the year. Aid to manufacturers in obtaining iron castings has been discontinued. Farm machinery products have also been eliminated from the fourth quarter certification plan.

Any manufacturer who receives a rated order from his customer is prohibited from extending this rating to purchase pig iron. Priorities assistance for pig iron will be assigned only under direction 13 to M-21. (M-21, PR-3; CPA-LD-259)

Windows of Washington

More positive foreign policy shaping up in Washington. Greater authority delegated to field representatives and instructions are available more quickly. Foundation laid for foreign economic affairs program by Undersecretary of State Clayton

A MORE positive American foreign policy appears to be developing from a series of conferences of members of the State and other interested departments and agencies over the past several months.

For example, we now appear to have a real program for Germany. Last June we decided to shut down on further reparations shipments out of our zone in Germany. Next the Office of International Trade, with Army co-operation, launched a campaign to interest American importers in buying German goods. Then came the agreement under which the United States and British-occupied zones are to be merged. And finally, Secretary Byrnes journeyed to Stuttgart and committed the United States to a policy of self-government for Germany.

To put it another way, the blueprint for American foreign policy, and the methods for carrying out that policy, are in an advanced stage of development. United States diplomats and Army and Navy commanders from now on should be caught off-base much less frequently. They know what to do, what to say, and when in doubt they can get instructions without delay. When General MacArthur warned that conflicting ideology must not interfere with the democratization of Japan, the State Department came out with a formal statement supporting him.

All this is in marked contrast with the situation of a short while ago when American representatives abroad were subjected to continual embarrassment over their lack of authority.

Of particular interest to business is the fact that for the first time since we became a nation we now have an undersecretary of state for foreign economic affairs. Shortcutting legal phraseology, the new undersecretary is concentrating on these broad objectives:

1. This time we must get values in return for dollars and goods we supply to the rest of the world; 2. this time we must use our economic policies to bring about the kind of a world in which we can live; 3. this time we must lay down economic foreign policies which will result in genuine help to business and employment at home.

William L. Clayton, the man with the new portfolio, has a big and tough job on his hands but one for which his previous experience—first as one of the largest cotton brokers in the world subsequently with the Reconstr Finance Corp. and then the State partment—appears to give him u qualifications. So that he may ha viewpoints, he works with several mittees that represent all the inte government agencies — Treasury, Commerce, Agriculture, etc., as w the Army and Navy.

These committees consider an a unlimited range of subject matte most international political consider are based on economics. Several t and people are working full time o various phases of the program. personnel problem is a difficult The State Department now is tryi recruit an additional 250 experi men to get into foreign service career basis. To help out tempor a pool of more highly trained go ment men is being made available to on special foreign service assign over the next year or two.

Faces Bank Problem

One of Mr. Clayton's difficult tions at the moment is whether t courage, as at first favored, raisin the capital of the new Internat Bank in the United States and pu its dealings on a dollar basis. Now feared that such a policy might be bad for American business in the fu if borrowing nations repay their loa dollars they will have less dollars to s for American goods.

Another problem involves prepar for our participation in the Pan-Ame Conference at Bogota next year. Mr. C ton naturally wants a program that promote closest ties with the Latin A ican countries. Subsidiary to prep for this conference are such questio what to do about the purchase prog of the U. S. Commercial Co. and Commodity Credit Corp.

Another problem is the preparatio economic platforms on which to nego trade agreements with some 20 count The first step is to determine what p uct concessions the United States sh be prepared to demand and wha should be prepared to give. After State Department draws up tent proposals, American importing, expor financial and other interests will ha chance to speak their pieces at a se of public hearings. Preparations also under way to draft "friendship, comm and navigation" treaties with a num of countries which do not yet qualify formal trade agreement treaties.

Also among immediate problems on

AUSTRALIA PAYS: Ambassador Norman J. O. Makin, right, of Australia delivers to Acting Secretary of State Will Clayton a check for $20 million in settlement of Australia's lend-lease account. NEA photo

The CONE AUTOMATIC MACHINE COMPANY

sees many

GOOD THINGS AHEAD

... is reported that .....

Amplex Division of Chrysler orp. proposes an industry-wide udy to standardize bearing sizes.

t ready with CONE for tomorrow

Dow Corning Corporation has a w white enamel made of silicone sins that approaches baked en- nel in its resistance to heat.

t ready with CONE for tomorrow

Bell Telephone Laboratory engi- ers have demonstrated a "tone nthesizer" that can imitate the und of any musical instrument.

t ready with CONE for tomorrow

Raytheon Mfg. Co. has a com- ct, rugged radar set for installa- n on merchant vessels.

t ready with CONE for tomorrow

An instrument called a "metal rter", made by Control Equip- ent Co. of Pittsburgh, identifies known metals by measuring the ectricity they develop when bbed by a known sample.

t ready with CONE for tomorrow

"Liquid Honing", a method of ishing metal surfaces with a ray of emulsion containing an rasive as fine as 2,500 mesh, is ing promoted by Vapor Blast fg. Co. of Milwaukee.

t ready with CONE for tomorrow

American Steel and Wire Co. s a nail that can be driven into el with a hammer.

t ready with CONE for tomorrow

Plastics can now be dip-dyed at om temperature with solutions rfected by International Print- g Ink. The color becomes in- gral, and the physical properties the plastic are not changed.

t ready with CONE for tomorrow

Oil Well Chemical Service Com- ny of Fort Worth has succeeded, th the help of Monsanto, in seal- g oil wells as deep as 11,500 feet th a liquid resin that permeates k and holds back unwanted tural gas.

A new combination tapping and threading attachment is now available for a leading line of six spindle automatics. The unit has a wide, selective, threading range; it can be mounted in any one or a number of endworking positions, as required, and it can be readily installed or changed over. A descriptive booklet is available.

get ready with CONE for tomorrow

Gulf Oil has an additive said to prevent foaming in lubricating oils.

get ready with CONE for tomorrow

University of California scientists have produced a standard for the measurement of length ten times as accurate as the cadmium light ray now accepted by using a light wave from transmuted mercury (made from gold) excited by a high frequency radio beam.

The Army and Navy are studying our natural caves, such as Carlsbad and Mammoth, in order to determine their usefulness as war-time shelters for industry.

get ready with CONE for tomorrow

Union Oil Co. has "Uniperox", a peroxide made from petroleum for use as a jet plane fuel, to improve diesel fuel oil and as a catalyst in the making of plastics.

get ready with CONE for tomorrow

The Ford Motor Company has announced its intention of erecting a $50 million laboratory for automotive research and engineering.

get ready with CONE for tomorrow

"Palestic" is a treatment for plaster which makes it as hard and strong as stone and also makes it adhere to plastics, metal or glass.

get ready with CONE for tomorrow

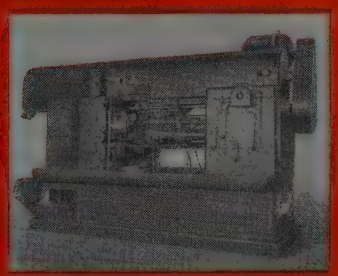
Tennessee Eastman claims that its Tenite plastic pellets blown from an ordinary blasting machine put a fine finish on aluminum castings.

FOLLOW THESE PAGES FOR NEWS OF PROGRESSIVE PRODUCTION

A TON of Chips every 15 hours

Every 15 hours a 5" 4-spindle Conomatic removes a ton of chips from SAE X-1315 bar stock to produce this piece within the time and tolerances required.

***You* can be ahead with a Conomatic.**



CONE

AUTOMATIC MACHINE CO., INC. ★ WINDSOR, VERMONT, U.S.A.

the most important is that of preparing for a huge meeting next June at which we hope to enroll some 50 countries in the proposed International Trade Organization of the United Nations. Mr. Clayton is busy organizing a delegation to attend a meeting in London in October for the purpose of deciding on the agenda for the meeting of next June.

Customer Again Is Right

Inexorably the process by which one of every four and a half government employees is due to lose his or her job prior to next June 30 is at work—and the wind that is proving ill for some is distinctly good for the many. Life in Washington is beginning to resemble that of prewar days. Good topsoil suddenly dropped from $15 to $5, and now is $3.50 a cubic yard delivered. There again is competition among the cleaners, and suits that took on a boardlike stiffness under wartime dry cleaning again are being rendered soft and inviting by washing. Luscious Smithfield hams from peanut-fed razorback hogs again are available—and at 79 cents a pound. The suburban farm women's market again is featuring homemade sausage and other goodies.

But the change which will be noticed and most welcomed by the many occasional visitors to Washington is a more courteous attitude on the part of waiters, bell boys, et al. About two weeks ago the Howard Johnson restaurants started weeding out nonco-operative help and the movement since has spread widely. The customer again is in the saddle!

Plan Hydrogenation Plant

The Bureau of Mines has placed a contract for equipment for what it believes is the forerunner of a great new industry. Under it the Bechtel Bros. & McCone Co., Los Angeles, will furnish $6,780,000 worth of equipment for a coal hydrogenation plant at Louisiana, Mo., which is to be fitted up to produce 200 barrels of synthetic liquid motor fuel daily. The contract includes heavy forged steel cylindrical reaction chambers, high-pressure heat exchangers and preheaters, high pressure pumps for handling coal-oil "paste," coal pulverizers, apparatus for preparing and cleaning coal and reducing the ash content, and a complete refinery outfit.

Some time in the future, also, the bureau believes, there will be an industry built up on extraction of oil from shale but a lot of development work first must be done to get costs down. The first contract, for two 40-ton retorts for distilling oil from shale, at Laramie, Wyo., has gone to the Southwest Engineering Co., Los Angeles, at around $175,000 which includes an estimate of engineering and installation costs. The final answer also will depend largely on mining costs, and the bureau now is studying the possibilities for getting low costs with different types of equipment at two shale properties near Rifle, Colo. A start will be made with electric shovels supplemented by motor trucks that will load underground right at the mine face.

In working on its synthetic motor fuel and oil shale program the bureau is in continuous contact with an advisory group from the following companies: Gulf Oil Co., Pittsburgh Consolidation Coal Co., Koppers Co., Atlantic Refining Co., M. W. Kellogg Co., Universal Oil Products Co., Hydrocarbon Research Inc., Texas Co., Standard Oil Development Co., Standard Oil Co. of Indiana and Bituminous Coal Research Inc.

MEXICAN UNIONS FETE WALLACE: Secretary of Commerce Henry Wallace, left, is greeted by Lombardo Toledano, organizer of the powerful CTM group of Mexican unions, at a luncheon given in Wallace's hon in Mexico City. In background is U. S. Ambassador Walter Thursto NEA photo

NPA Studies Labor Relations

National Planning Association officers are hopeful that an approach they are making on the labor-management problem may bear fruit. Sometime ago they decided that the most important domestic problem in the United S is that involving industrial relations. izing that a one-sided approach w be worse than useless, they add number of trustees with the obje steering the study along factual, partisan lines. Among them are W Green of AFL and Philip Murray of

Now, by unanimous agreement, association will launch a study o labor relations of companies which enjoyed good labor relations continu over long periods of years. The obj to determine what factors make " labor setups "good."

Ask Contract Criticism

In response to a request issued two months ago, the Federal Sta Contract Committee has received a or so complaints about dubious an jectionable language in government curement contracts. Now the requ renewed; the committee wants to plete its work of drafting standard

procurement contracts before the end the year, and it is eager to hear from ntractors who do not like the features existing contract forms. Communicans should be addressed to the comttee chairman, Julius Silverstein, Office the General Counsel, Treasury Departent, Washington 25, D. C.

AA Charged with Faux Pas

A strange oversight of the language sitivity of the Latin American counes is chargeable against the War Assets ministration. It has printed up huge mbers of Spanish-language circulars for tribution in South America, and has de no allowance apparently for the t that the official language of the gest country, Brazil, is Portuguese.

The circulars feature surplus machine ls and other production equipment ich WAA now is offering for export e. The circulars will go to some 700 proved machine tool dealers" who l stamp them with their names and dresses and then send them out over ir Latin American mailing lists.

ore Patents Listed

Several more companies have listed ge blocks of patents at the Patent ice's "Register of Patents Available Licensing or Sale." These include: Farnsworth Television & Radio Corp., h 65 electric phonograph and acces- patents; 208 television and radio ents; and 11 electronic communicans and signaling patents.

Petrolite Corp., with 408 patents cover- various operations in processing roleum.

The Linde Air Products Co., listing patents including 4 covering removal deposits from still tubes, 14 covering Unionmelt welding process, 6 cover- a method of building tanks and other lti-plate structures, 1 covering a hod for removing metal from metal cles, 1 covering a method of cutting flame machining, 7 covering a pres- welding process, and 23 relating heat treatment and equipment there-

The Department of the Interior has d 22 patents for royalty-free license. luded is Patent No. 2,403,481 cover- a soda ash process for concentrating ore.

AA Compiles Register To t National Fixed Prices

n a move to insure uniform prices ughout the United States on surplus ds that are sold on a fixed-price s, the War Assets Administration has piled a nine-volume price register, to be maintained as a national clearing house of price information on surplus property.

The register represents the first time that all items priced on a national basis have been cataloged in a form that provides a quick reference.

Covering thousands of items, the volumes are broken down into these categories: Automotive and machinery; hardware, plumbing and general products; paper, furnishings, furniture, office machinery and equipment; drugs and medicines; textiles, apparel and footwear; general industrial equipment; materials and supplies; metalworking equipment; and metals.

The register establishes prices according to various levels of trade and sets the minimum and maximum quantities to be disposed of to a buyer.

Foreign Trade Advisory Committees Set up in OIT

Development of an advisory body on trade relations to assist the Department of Commerce was described recently by Arthur Paul, director of the department's Office of International Trade.

Representative foreign traders, manufacturing, export and foreign trade groups will assist the OIT, Mr. Paul said and declared that an Export Advisory Committee, with 37 exporters in it, has already had a preliminary meeting. Another committee representing importers has been formed.

"It is our belief that better understanding between business and government and the development of sound and increased foreign trade can be achieved by co-operation and counselling with businessmen and trade groups through these advisory committees," Mr. Paul said.

Seek Action for Improved Passport, Currency Rules

Concerted business and governmental pressure may result in action by the United States for simplifying passport and visa procedures, customs inspections of luggage, and operation of currency controls.

Sponsored initially by the International Chamber of Commerce, the idea was taken up by the Department of Commerce, and was recommended in a letter from the Secretary of Commerce to the Secretary of State. As a result of this correspondence, the State Department may seek some international accord by the Economic Council of the United Nations.

Additional Steel Items Put Under Export Control

Consolidated licensing procedure extended to cover exportation of all iron and steel products on positive list

NUMEROUS iron and steel products have been added to the positive list of commodities requiring licenses for export by the Office of International Trade, Department of Commerce.

At the same time, the OIT announced that, effective immediately, the consolidated license procedure has been extended to cover the exportation of all iron and steel items on the positive list. Under this procedure applicants submit a single license application quarterly which, if validated, will constitute a consolidated license for the exportation of the licensed commodities to all group K countries.

Consolidated license applications for the fourth quarter of 1946 should be submitted not later than Sept. 23. Applications for subsequent quarters should be submitted on or before the first day of the month preceding the beginning of a new calendar quarter. Application forms and all pertinent instructions and information may be obtained from field offices of the Department of Commerce.

Listed Products Enumerated

The following products have been added to the positive list:

Steel sheet bars, and tin plate bars containing no alloy; concrete reinforcing bars; other steel bars (hot rolled) containing no alloy, one-inch and under only.

Wire rods; skelp, iron and steel; steel sheets, black, ungalvanized, (hot and cold rolled included) containing no alloy; iron sheets, black; iron and steel strip (cold rolled) containing no alloy.

Structural shapes, except fabricated; angles, channels, and beams only, six-inches and under; malleable iron screwed pipe fittings; cast iron pressure pipe fittings; welded black pipe, steel; welded black pipe, wrought iron; welded galvanized pipe, steel; welded galvanized pipe, wrought iron; iron and steel pipe fittings, not elsewhere specified; bale ties, wire, iron and steel; tin foil.

Several nonferrous metals, including copper, lead, brass and zinc in various forms, have also been added to OIT's positive list of products requiring license for export, effective immediately.

Steel Winning Increasing Acceptanc

Producers drawing plans and preparing cost estimates to promote metal in more household applications. Actual housing construction—already started—seen as next big step. Structural advantages stressed

ALREADY widely used in solving utility furnishing problems in the home, steel is winning increasing acceptance in many other applications that soon will bring its structural advantages to the householder's castle.

Major steel producing companies are drawing plans and estimating competitive costs to assure this material a permanent seat at the American hearthside.

Inherent strength, dimensions that are the same year in and year out, smooth surfaces, and special steels capable of receiving hard, lasting finishes are some of the advantages being stressed by producers as the reasons why steel is being urged to take off its hat and stay. The next big step in acceptance of steel in homes—and one which is already underway—is actual home construction.

"Steel is firmly entrenched in the kitchen, laundry, bathroom and basement," says Dr. R. E. Zimmerman, vice president, research and technology, United States Steel Corp. "It is winning its way into dining and living rooms, bedrooms and the sun room. It may enclose these areas with strong, tough internal and even external walls, cover them with ceilings, connect them with stairways, warm them with radiant heating pipes, and cool them with air-conditioning ducts."

New Cabinet Being Designed

Among new steel home developments that veer from furnishings toward the structural, still on the drawing board, is an all-steel cabinet designed to cover an entire bedroom wall—or, in new construction, to serve as a wall between two bedrooms, available to both, thus saving 6 to 8 inches of partition space. Fitted with tightly closing doors, this cabinet will contain removable trays for shoes, drawers for personal linen and lingerie, shelves for hats, blankets, pillows and other bedroom articles, and separate closets for clothes. The tight, vermin and dust-proof doors make it possible to set aside one closet for storage of winter clothes, which may be additionally protected by DDT spray.

Another steel cabinet still in the design stage will provide shelves and drawers for household linens. Equipped with sliding doors, it will be practically dust-tight, as well as vermin-proof, and may be connected with a clothes chute. A new all-steel cabinet for sale at a modest price is also being designed especially for canned goods in kitchen or basement.

A complete home unit which has already proved its worth is the prefabricated shower stall, made from porcelain-enameled or stainless steel. Bathtubs, too, are now fabricated from sheet steel and finished in porcelain enamel, thus combining substantial weight saving with the beauty of lasting finish in a variety of colors. Similarly, lavatories, sinks and laundry trays are being pressed from sheet steel and finished in porcelain enamel.

Another new unit being considered for the home is a steel toilet, the bowl, trap and drain pipe of which would be formed from stainless steel, while the supporting shell would be of porcelain-enameled sheet steel in color. This shell would fit against the wall, hiding trap and fittings, and the use of a trip valve would eliminate the awkward flush tank.

A steel unit for the home also likely to win wide acclaim is the prefabricated steel staircase. Introduced before war, it has been installed in a consi able number of multi-storied dwell and has the advantage of single-unit c struction, is creak-free, fire-resistant easily installed.

Steel may be especially selected its specific job, say these technolog This does not mean a new steel for e new use, but that the most suit composition may be chosen from the ready large list.

This technique can be used to p duce unit steel housing sections. M of the experimental work has been d and successful examples of this type construction in many cost brackets n be seen in various parts of the country

The properties of steel make it ic in home construction, United States S officials point out. It is easily fabrica adaptable to numerous methods of ishing and, finally, it is economical. of the important considerations is t steel may directly replace several m rials performing different functions, s performing all these functions togeth

When this modern practice is lowed, according to the experts, steel panels offer the following advantages

1. Ample stud strength is assured proper design.

2. Good insulation is assured by p vision of dead air space.

3. Condensation difficulties are overme by use of insulation.
4. Steel panels provide a flat, true inior wall, ready for any desired type of ish.
5. Since steel surfaces do not reathe" the walls remain cleaner and nsequently, easier to maintain.
6. Speedy erection and completion.
7. Adaptability to radiant heating.
8. Flexibility of steel unit design re-lts in greater ease and simplicity of nstruction, storage and movement of terial.

No unusual foundation problems are countered in preparing for modern el home construction, it is noted. Floor its are fabricated from steel sheets rmed into panels which can be bolted rectly to the foundation. Over these id panels a mastic top coating is ap-ed and wood block flooring or lino-m set in.

Vertical steel panels, designed to pro-le desired insulation, smooth wall sur-es, and also the strength required to pport a second floor or roof, are at-hed to the floor units. The wall panels room height, assembled into sections provide a 4-foot module for easy erec-n. Other panel groups contain win-w and door sections.

Outside, these modern steel houses can be of familiar materials, such as brick, stone or wood—or long-lasting porcelain-enamel fused on steel, easily washed and requiring no new coat from year to year, may be used. Windows have steel sections and frames. Their sills usually are made of porcelain-enameled steel.

Home buildings and apartments constructed of steel panels are no idle dream. Many have been erected in various parts of the country. One such building, in River Forest, Ill., has 281 apartments and has proved extremely economical to heat and maintain.

Flat roofs can be of normal roof construction with gravel stops of colored porcelain enamel on steel. Gable roofs may be built of light steel framework or pan construction, covered with porcelain-enameled clapboard-style steel roofing sections. An interesting example of clapboard steel roofing and siding is a housing project near Hammond, Ind., where a number of such houses have been built.

Heating, cooling and air-conditioning equipment may be installed to provide indoor comfort in the steel panel home. Electrostatic dust precipitators, air filters and washers remove dust, pollen, germs and odors from the air.

Radiant heat is in immediate prospect for the American home, and steel walls, floors and ceilings are ideal for this installation. One new system circulates air at 130° above a suspended ceiling, the heated ceiling radiating warmth to persons and objects in the room below. Other new systems use the steel baseboard or cornice panels to circulate the heat.

Steel did not limp its way to the door of the American home nor employ subterfuges to gain admission, steel technologists explain. It arrived in state in the family car.

The automobile was one of the first applications to bring steel's many advantages to the intimate attention of the householder. Research in deep-drawing steels, which made possible the all-steel automobile body, also created steel laundry and bathtubs, sinks and the washing machine, and the extreme flatness of steel sheets, developed to provide a foundation for tough, hard enamel finishes on automobiles, worked equally well for refrigerators, stoves, cabinets, furniture and the like. The present trend merely brings other established structural advantages of steel, long used in bridges, skyscrapers and ships, to the home.

New homemaking ideas developed by steel producers are increasing the quantity of steel used in the home. Shown at right is a modern kitchen, complete with electric refrigerator, stove, toaster, combination sink and cabinets. Entire kitchen unit, including sink and cabinets, is made from steel. At left is a typical porcelain-enamel home with an exterior that is easily washed, requires no paint and lasts for years

Record Industrial Activity Forecast in Eastern Area

Industrial building potential in the eastern states will not be exhausted for perhaps a decade and more business is available now than in any other peacetime period, Wells N. Thompson, vice president, H. K. Ferguson Co., Cleveland, said recently.

"The upward surge in plant engineering and building is indicated by numerous market surveys made by this firm of industrial engineers and builders. Manufacturers' future building programs are taking advantage of the consumer concentration in thickly populated eastern states," Mr. Thompson said. "Some firms are relying on distribution of finished products to offer greater savings with new facilities in this area. Other corporations with widely scattered manufacturing plants are finding it more profitable to construct or enlarge eastern factories than to invest in maintenance construction and long-delayed repairs in buildings elsewhere."

Additional reasons for increased industrial building volume in this section were given as follows: Some industries in the East need either modernization or total replacement to permit them to compete successfully with other manufacturers; and comparatively few new plants were constructed in this area during the war because of security restrictions.

New **BULLARD MAN-AU-TROL SPACER**

Saves time, money and labor in your Drilling Operation

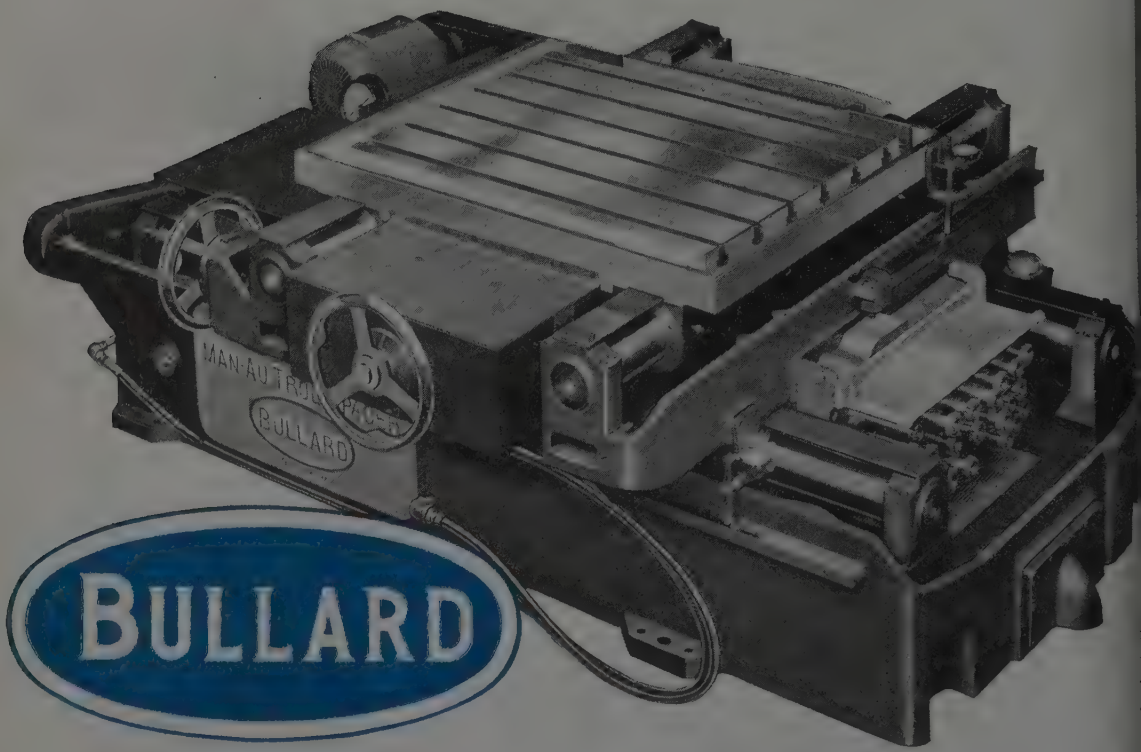
NOW...

BULLARD ELIMINATES JIGS for drilling, boring, reaming, tapping!

Designed for installation *by you* on your drills, the new Bullard MAN-AU-TROL Spacer, in most cases, eliminates hole-locating jigs... and the time, money and labor required to design, make, handle, repair and store them.

With unprecedented speed, ease and accuracy, you can set up the Spacer to do the work of jigs that may take weeks or months to make. Once its lateral and longitudinal position stop rods are set for a pattern of holes, the manually controlled, automatically operated Spacer will repeat that pattern indefinitely *to the highest standard of commercial spacing accuracy.* Extreme flexibility permits the use of the Spacer on a large variety of large and small work.

The results: faster, more accurate production . . . lower costs . . . less overhead . . . less human fatigue —all valuable factors in improving your competitive position. Write for MAN-AU-TROL Spacer Bulletin. The Bullard Company, Bridgeport 2, Connecticut.



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CREATES ***NEW METHODS*** TO MAKE MACHINES DO MORE

Made in 2 sizes — 30" x 20" (illustrated) for larger work on 4', 5' and 6' Radial Drills; and 4" x 4" for work usually done on smaller types of drills.

A. H. ALLEN Detroit Editor, STEEL

Mirrors of Motordom

Lead shortage may slow auto production. Many companies have only month's supply. Domestic production falls far short of requirements. OPA ceilings restrict flow of scrap metal into legitimate channels. Import policies questioned

DETROIT

F CERTAIN supply sources do not the lead out of their plants pretty ck, another crippling shutdown on omobile production is indicated. The or industry is the most important sumer of lead, using normally about per cent of the total supply for bat-es, solder, bearings and terne plate. trend has been upward, if anything, e the start of the war, since the short- of tin has meant increasing reliance on l. As things now stand, automotive ers are literally scouring the country earch of lead supplies and are com- back empty handed. General Mo- indicates it has enough in sight to y through this month, but October is uestion mark. Other companies are pproximately the same position. One the smaller metals companies here, plying lead and lead alloys to the omotive trade, reported it was closing Tuesday because of complete dry-up of lead supply.

he story is the old familiar one of ernmental regulations, allocations, A price recontrol, weird import poli-, etc. The entire situation has been lined by the automotive industry to n Steelman of the OWMR, and it hoped that emergency steps can be en to relieve the immediate difficulties. h the employment of around 500,000 eatened, it is almost inconceivable h action will not be forthcoming.

Demand Far Outstrips Output

Roundup of the salient facts shows : Total U. S. demand for lead on a ricted consumption basis is about 80,- tons a month. Domestic output of nes this year has averaged 25,000 to 00 tons per month, and under pres- conditions no more is to be expected m these mines, which operate under abor shortage of 25 per cent and un- a subsidy program which appears e contrived so as to place a premium the working of high-cost low-yield es and a penalty on operation of high- d veins. Of the total domestic pro- tion, 25 per cent must be shipped the Metals Reserve Corp. for alloca-, the balance sold through conven- al channels.

During the lapse of the OPA the price lead rose from 8.25 cents a pound, the ceiling, to 9.50 cents and immediately the movement of both concentrates and lead scrap was importantly stimulated. Until that time, little scrap was appearing on the market, the supposition being that it was being channeled principally to plumbers through the black market at a considerable price premium. Normally, scrap can be counted on for about 25,000 tons per month. With the restoration of OPA price controls, the lead price was "rolled" back to 8.25 cents in the interests of "holding down the cost of living," and immediately the flow of scrap stopped and refineries which had purchased concentrates on the basis of the higher price began to wonder how they could possibly make out with the price of metal pushed back to its former level.

Since it appears obvious domestic requirements for lead cannot be met from domestic production, imports must be depended upon to make up the balance. For some strange reason, a "deal" is reported to have been made by the government with Great Britain to restrict U. S. imports from that country this year to a maximum of 7500 tons a month, drastically lower than last year. Beyond this, Metals Reserve is buying in world markets at a price over the domestic ceiling, but probably not up to the effective world market which is around 10 cents a pound. Government purchases abroad are understood to be based upon informal agreements and understandings with foreign nations, and no explanation of these agreements affecting foreign distribution has been made.

The automotive industry, in its appeal to Mr. Steelman, does not attempt to recommend a course of action, nor to judge whether the enforced withholding of lead supplies from the market by smelters because of the price rollback is legitimate or proper. All it seeks to do is to state its "in the middle" position which endangers the jobs of half a million and which may further delay the shipment of new cars to long-frustrated buyers.

Discussing the lead shortage, C. E. Wilson, president of General Motors, said recently that discussions had been held over the advisability of shipping new cars minus batteries, leaving it up to the buyer to find a new or used one somewhere. Thus far, such a policy has been ruled out for the reason that various GM divisions consistently have refused to ship anything but complete cars, with a few minor exceptions.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

Tabulated by Ward's Automotive Reports

	1946	1941
January	121,861	524,037
February	83,841	509,332
March	140,777	533,878
April	248,318	489,856
May	247,620	545,321
June	214,511*	646,278
July	330,764*	468,897
August	364,046*	164,793
Estimates for week ended:		
Aug. 24	91,360	45,525
Aug. 31	74,960	39,965
Sept. 7	76,106	32,940
Sept. 14	95,000	53,165

*Preliminary

Employees Demand Cars

As the production pace on new passenger cars mounts, one more difficulty being encountered by builders is the strident demand for cars from employees who watch their handiwork being driven out to haulaway lots while they get only blank stares from dealers with whom they try to place orders. The situation became so critical at Nash in Milwaukee the other day that body plant employees quit work allegedly in protest against new cars being earmarked for export while they could buy none. The situation was adjusted by the management agreeing to allocate 17 cars a week for delivery to employees, with the proviso, however, that the assembly rate would be maintained at 500 per day or better. This figure is about what Nash has been producing over the past few months when sufficient materials were available.

Another manufacturer, faced earlier with the same problem, agreed to allocate a certain number of cars each day for employees, and to increase this number when hourly assemblies ran above a certain point. To make an equitable distribution of these cars to employees—sold at a discount of 20 per cent, incidentally—an elaborate point system was worked out whereby each employee wishing to buy a car could determine

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NEW BUICK BUILDING: First major project in Buick's postwar expansion and modernization program to be completed is this manufacturing and subassembly building at Flint, Mich. It has 252,000 sq ft of floor space. Constructon of a dozen other buildings at Flint will add another 1,000,000 sq ft of floor space for Buick operations

his rating on the basis of seniority, age of his present car and the need for it, length of service with the company, etc. Those with the highest point ratings, of course, were allocated the first cars, each recipient signing an agreement that he would not dispose of the vehicle inside of one year.

OPA Sues Steel Brokers

Claiming the Detroit surplus steel black market the worst he had found in five states of the district, a regional OPA steel price specialist has brought treble damage suits totaling more than $319,000 against four concerns here. The suits, so the specialist declares, involve surplus steel bought from the War Assets Administration for as low as $16 a ton and resold for as much as $120 a ton, passing through several brokers on the way up. Also under investigation by the OPA were several cases where steel was purchased by veterans using their high priority and acting as "finders" for brokers. The disclosures tend to confirm comment published here several months ago on the matter of "special deals" on steel being offered buyers by brokers never before in the business.

Tucker Has Difficulties

The Tucker Torpedo is having its troubles in getting going in Chicago, primarily due to difficulties over financial arrangements on leasing the $180 million Dodge-Chicago manufacturing plant. Under the most recent arrangement, Tucker was to pay $600,000 the first year, $800,000 the second year and $2.4 million yearly thereafter. This has appeared a little stiff to Tucker and his backers, who reported'y thus far have paid only a $10.000 option fee, and they have requested easier payments since it will take about a year to make any semblance of production in the plant. The WAA, however, has balked at the new proposals and has made a counter-offer with a deadline of Sept. 18. The current unsettlement in securities markets conceivably could put the kibosh on the whole deal.

Break-Even Point Up

Considerable discussion is heard these days of the so-called break-even point in motor car manufacturing—in other words, at what level of production do operations move into the profit area. Hitherto it has been considered sound business to have the break-even point somewhere between one-third and one-half of capacity, because it has not been possible to operate at capacity for 12 months of the year, or for year after year. Present conditions throw this line of reasoning considerably out of gear, with the result that General Motors, for example, is operating at something over half of prewar capacity yet is still some distance from showing any substantial operating profit. Another smaller company, now operating at around 80 per cent of the prewar peak, does not expect to show any profit until November and then only if assemblies are m ahead to still higher ground.

One reason, of course, is the pos disorganization of production incide reconversion. Another is the red productivity of working people. Ge Motors says the best measure it make indicates a productivity of ar 80 per cent now compared with 19 not too bad but still not good. A t reason is overloaded supervisory fo in most plants which early this were being geared for production beyond any yet achieved. A fourth re is the high proportion of nonproduc labor in unit costs, something all a motive plants are now trying to t It is no easy task when you consider amount of expediting necessary to k materials flowing, along with 40-50 cent increases in cost of clerical h supplies and nearly everything else going directly into the motor veh itself.

Labor turnover and absenteeism two other phases of the production ture which throw the normal rou into a tangle and add to unit costs. senteeism for the Tuesday following bor Day in the five passenger car ma facturing divisions of GM, for insta was approximately 10 per cent, a double the average for this year, four times the rate prior to the war.

Add all the above factors toge and stack them against price relief gran on passenger cars by OPA and to it spells out the need for another $ increase in prices. Such an adjustm currently is being sought and if gran probably would be the signal for ot manufacturers to ask similar upw moves in prices.

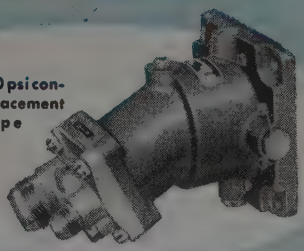
Buick Assemblies Gain

One of the brightest performers the GM troupe at the moment is Bu where assemblies have been moving steadily and are now past the 5000 we mark. August output was 20,098, 36 cent ahead of July, and marked the tainment of the 1000-car daily vol for the first time since prewar. Total put for the year through August 64,765, or the equivalent of about months' production in 1941.

Ford Limits Styles

Report is current in automotive ci that Benson Ford, younger brother Henry Ford II, is being groomed for presidency of the Lincoln-Mercury vision, now established as a separate tity from the Ford organization. Me while Ford has announced the disc tinuance of production of five body st in the interests of concentrating on half-dozen or so remaining types.

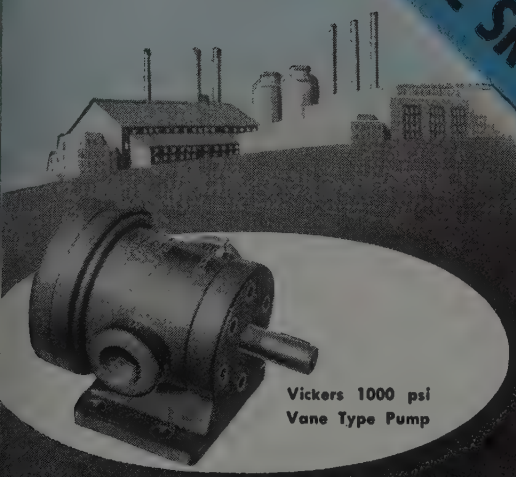
VICKERS Hydraulic Pumps AND CONTROLS



Vickers 3000 psi constant displacement Piston Type Pump

HIGH IN THE SKY to DEEP IN THE EARTH

Reliability with minimum weight . . . greater safety and longer life . . . are among the exacting requirements of the airlines. It is significant to designers and users of many other types of equipment that Vickers Hydraulic Pumps and Controls are widely used in the 3000 psi hydraulic systems of these huge planes that are literally writing new pages in aviation history.



Vickers 1000 psi Vane Type Pump

ge cutting machines depend upon Vickers Hydraulic nps and Controls to speed the work and reduce the t of mining coal. The operator controls the massive chine more easily than you drive your car.

ween these extremes, Vickers Hydraulic Equipment serving industry in countless ways . . . wherever urate, dependable and easy control is needed. In dition to the thousands of more widely known appli- ions on metal working machinery, Vickers Hydraulic nps and Controls are used on construction equip- t, motor buses, printing presses, agricultural chinery, marine equipment, oil well pumping s, textile and paper machinery, trucks, etc. kers Application Engineers will be d to discuss with you how hydrau- can be used to your advantage.

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PHILADELPHIA ★ ROCHESTER ★ ROCKFORD ★ SEATTLE ★ TULSA ★ WORCESTER

Allotments for New Plant and Equipment Rise

Industry plans to spend $3.2 billion during third quarter of 1946, compared with $2.9 billion in second quarter

EXPENDITURE of $3.2 billion for new plant and equipment in the third quarter of 1946 is planned by American business, exclusive of agriculture, the Securities & Exchange Commission and the Department of Commerce reported.

A joint quarterly survey, based on reports submitted by corporations and manufacturing companies, said that there has been a steady increase in expenditures for new plant and equipment since the beginning of 1945. Estimated outlays in the third quarter of 1946 are almost twice those in the corresponding quarter of 1945. Planned expenditures for the second quarter of 1946 were $2.9 billion. Actual expenditures during the first quarter of 1946 totaled $2.2 billion.

"If the anticipated expenditures on new plant and equipment for the third quarter of 1946 actually eventuate," the report continued, "they would be at an annual rate 50 per cent higher than the peak year 1941. Taking into account the substantial increases in prices since 1941, resulting expenditures would still be somewhat higher than 1941."

During the first quarter of 1946, industry as a whole spent 10 per cent less than had been planned, chiefly because a few very large manufacturing concerns were unable to obtain requisite materials or met labor difficulties.

"Planned expenditures on new plant and equipment by manufacturing and mining companies in the third quarter of 1946," the report said, "are estimated at $1.8 billion, 55 per cent of the total amount for all industry. Of this sum, manufacturing alone accounts for $1.7 billion, of which about 70 per cent was planned for the purchase of equipment."

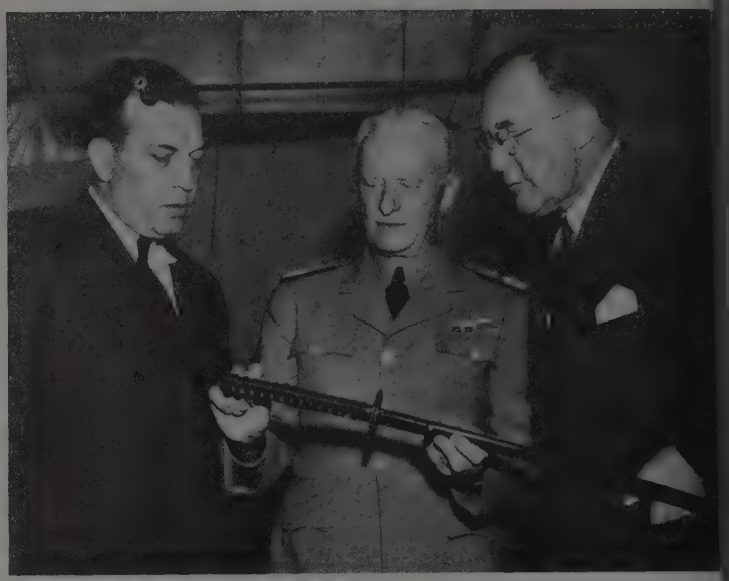
New Bethlehem Facilities To Start Operating in 1947

Operation of part of the facilities included in the $20 million program at Bethlehem Steel Co.'s Lackawanna, N. Y., plant is expected early in 1947, Edward F. Entwisle, general manager of the Lackawanna plant, has announced.

The program, which was announced in September, 1945, includes a fourth slab heating furnace for hot strip, additional finishing equipment for hot-rolled sheets and modernization of existing equipment.

"Improvements are also being made to facilities for finishing cold-rolled sheets, including an extension of the coil storage building and modern conveyors for handling the large tonnage of materials involved," Mr. Entwisle said.

"Extension of both of the continu pickling units to increase their capac the addition of a fourth stand to of the two continuous cold reducing m and the addition of a new cutting-up particularly adapted to cutting ligh gage sheets are also part of the curr construction," Mr. Entwisle added.



SOUVENIR: Fleet Admiral Chester W. Nimitz, ranking naval hero o World War II, shows samurai sword, sent him by a former Japanese admiral, to R. S. Peare, left, General Electric Co. vice president, and C. E Wilson, right, GE president. Admiral Nimitz took part in a special V- Day commemoration telecast over WRGB, GE's television station a Schenectady

BRIEFS . . .

Paragraph mentions of developments of interest and signi cance within the metalworking industry

Crucible Steel Co. of America, New York, has moved its New York branch sales office and warehouse from 537 Broom St., to 650-652 East 12th St., New York 9.

—o—

Crescent Corp., Fall River, Mass., has acquired Potter & Johnston Machine Co., Pawtucket, R. I., manufacturer of automatic turret lathes.

—o—

East Shore Machine Products Co., Cleveland, has acquired the tool and surface plate business of State Mfg. & Construction Co., Franklin, O.

—o—

Monsanto Chemical Co., St. Louis, has purchased for $9,550,000 from War Assets Administration the Texas City, Tex., styrene plant which Monsanto bu and operated during the war. The co pany is planning to expand its polys rene plastic production to a rate of m than 80 million pounds by early 19

—o—

National Radiator Co., Johnstown, P has announced a course in "Heating Sal manship" which has been prepared LaSalle Extension University, Chicago.

—o—

Luria Steel & Trading Corp., N York, has opened a district office in t Syndicate building, St. Louis.

—o—

Rheem Mfg. Co., New York, has for ed an association with Hume Pipe F East Ltd. to operate a steel shippi container plant at Singapore, Mal

eninsula, for the petroleum, latex and lm oil industries. The new company, heem-Hume Ltd., is capitalized at 00,000.

—o—

Elliott Co., Jeannette, Pa., has re-ived a contract for a locomotive gas rbine from Locomotive Development mmittee, Bituminous Coal Research c., Washington. The turbine, to be ted at 3750 hp at the turbine coupling, ll burn pulverized coal.

—o—

Sterling Engine Co., Buffalo, has re-ived a $1,500,000 order for Viking esel engines and parts to power diesel-ectric locomotives produced by Whit-mb Locomotive Co., Rochelle, Ill.

—o—

REF Mfg. Co., Mineola, Long Island, . Y., has developed a rustproof, cor-sion-resistant sink bowl for all types boats. The bowl is made of solid, 18-ge Monel metal.

—o—

Watson-Standard Co., Pittsburgh, has nounced a new series of protective atings as a substitute for white base d finish coatings.

—o—

Food Machinery Corp., San Jose, Calif., s purchased Bolens Products Co., Port ashington, Wis., manufacturer of gar-n tractors.

. S. Steel Corp. Properties West To Be Inspected

Properties of the United States Steel rp. in Utah and California will be spected this month by a party of direc-rs of the corporation.

The inspection will start in Utah on pt. 19 and will end in Los Angeles a ek later. The party also will make st-hand observation of postwar indus-al progress in the western states.

Regular meetings of the finance com-ittee and board of directors of U. S. eel will be held at the San Francisco ice of Columbia Steel Co. on Sept. 24.

ntava Inc. Signs $5 Million rmy Air Forces Contract

The United States Army Air Forces s signed a contract with Intava Inc., w York, for servicing AAF planes in countries throughout Europe, Africa, d South America. The contract per-its withdrawal of military forces at ny of the airports in these countries. Supply of aviation fuel and lubricating will be controlled by one contract, hich is the largest of its kind ever en-ed into by the AAF. This contract bligates procurement funds in excess of $5 million and permits large stocks of AAF fuel and oil available in military installations to be handled and issued on a service fee basis.

$3 Million Modernization Begun at J. I. Case Plant

J. I. Case Co., Racine, Wis., has begun a $3 million modernization and expansion program at its tractor and farm implement plants in Rock Island, Ill. Several old buildings will be replaced by a $1,500,000 one-story factory building. A new office building, modernization of machine tool equipment, a 6000-square foot addition to the foundry, improvements to the casting units and a new snap flash unit are contemplated. The Rock Island works now has a capacity of 80 tractors a day.

New Steel Warehouse Firm Organized at Los Angeles

Opening of a steel warehouse in Los Angeles was announced last week by Robert Zurbach, formerly with the L. E. Zurbach Co., Somerville, Mass. Following disclosure that his firm was specializing in sheets and flat rolled strip, Mr. Zurbach reported that his initial stock of some 60 tons was "sold out within two days."

The company plans to install shears and round edging machines with the acquisition of permanent quarters. Temporary warehouse and plant offices are at 2619 S. Santa Fe Ave., Los Angeles.

Bundy Tubing Co. Relocates General Offices

Detroit industry moves six administrative departments to new headquarters recently purchased and remodeled

BUNDY Tubing Co., Detroit, has moved six administrative departments to new general offices on East Jefferson Avenue, that city.

Purchased and remodeled at a cost exceeding $100,000, the new offices supplant facilities on Hern Avenue and were acquired as part of a general expansion program which includes a research laboratory now nearing completion at Coolidge Highway and Maple Road. The new offices provide 15,000 square feet of floor space to accommodate approximately 100 employees in the company's executive, purchasing, sales, advertising, comptroller's and general accounting departments.

Moving of the offices was prompted by a desire to obtain a location easily accessible to the downtown area and by difficulties encountered in procuring new building materials.

Bundy's main plant on Nine Mile Road is producing up to 50 million feet of tubing a month.

DELIVER FIRST EARTH MOVER: First "Gradall", multi-purpose earth mover produced by the Warner & Swasey Co., Cleveland machine tool builder, is delivered to Thomas Conte, partner in the Construction Equipment & Supply Co., Pittsburgh. Delivering the keys to Mr. Conte, in driver's seat, is Charles J. Stilwell, Warner & Swasey president

Production at West Coast Mills Threatened by Scrap Shortage

Lack of supply attributed to the drop in shipbuilding and to curtailment of steel shipments from eastern mills to West Coast fabricators. Shipbreaking not expected to provide enough scrap for current needs

SAN FRANCISCO

SOME West Coast steel mills which have been operating at or near capacity soon may have to curtail production because of dwindling supplies of scrap.

Flow of scrap to mills has been declining steadily for a number of months and stockpiles now are the lowest in recent years. Some mills have less than a week's supply on hand.

In normal times before the war, the West Coast was never a surplus scrap area. Normally, furnace charges are in the proportion of 85 to 90 per cent scrap and 10 to 15 per cent pig iron. (It is understood this ratio in some mills recently has been increased to about 30 per cent to 35 per cent pig). During the war, because shipyards produced large amounts of scrap, West Coast mills had enough for all needs and surplus was built up for allocation to other areas. Large amounts of this surplus scrap were shipped eastward by the government. However, when shipbuilding operations were halted, this major source of supply was cut off, and scrap supply problems have been mounting ever since.

Another factor has been the curtailment of steel shipments to the coast by eastern mills. Fabricators have had to curtail operations because of the shortage of many steel items, and this has had the effect of reducing the supply of trimmings which previously went back into coast furnaces.

It is believed some scrap is being held back by speculators, but there is no estimate of the amount involved. In any case, the other two factors are more important.

Some relief to the scrap scarcity may come from break-up of surplus vessels, although that source is not likely to be large enough to offset all of the shortage. Moreover, shipbreaking is only getting started now and is quite likely to move slowly.

. One company in the San Francis Bay area has just started breaking ten surplus vessels purchased from t Maritime Commission last spring. The ten vessels are expected to produce 2 000 to 30,000 tons of No. 1 heavy melti grade scrap, which will be shipped mills at the rate of 2000 to 3000 to a month. This is the first breaking ope ation of any size on the West Coast. is expected to be followed by more wh more vessels can be obtained.

A large amount of scrap is being p up for disposal by the government Hawaii, but under terms of movemen it is not likely that enough transpo space can be arranged to attract buye

Steel mills on the West Coast co sume about 1,600,000 tons of purchas scrap annually in addition to the m terial which comes from their own oper tions. California mills alone require son 1,300,000 tons. Approximately 1 millio tons of the coast consumption is in ope hearths, and 365,000 tons are needed steel foundries. Gray iron foundries r quire some 235,000 tons a year.

One factor which may affect the scra supply further will become appare more clearly soon. Workers in scra yards in the San Francisco area have ju been granted a wage increase of 12 cents an hour and time and a half f Saturday work. As labor is about 75 p cent of the operating expense of a scra

SEAMEN PICKET: Nationwide maritime strike gets under way on San Francisco's Embarcadero. Here several AFL Sailors Union of the Pacific pickets, in foreground, patrol outside the Matson Navigation Co. piers. CIO longshoremen, in background, refuse to cross picket line. NEA photo

rd, the result is an increase of about
per cent in overall yard costs.

Meantime, the shortage of finished
el items grows more severe than ever
the San Francisco area. Although
eneva Steel is approaching full opera-
ns and expects to turn out more than
,000 tons of plates in September, the
k of rolling mills to produce lighter
ms is the big bottleneck. The greatest
el shortages are in sheets and other
ht products.

An informal survey of several Bay
ea fabricators shows that steel is the
mber one scarcity, with shortages of
pper, brass and bronze products, and
ectric motors and wire running close
cond. In the construction industries,
ils still are scarce, as are a number
other steel building items.

One manufacturer of furnaces, fans,
ter heaters and similar items says that
e shortage of light gage steel sheet is
iting his production severely. This
mpany could triple output if it could
tain all the steel and motors it now
quires.

Another firm is hard put for gray iron
stings, galvanized sheets and copper
pe fittings. A maker of building hard-
re has cut operations sharply because
the shortage of cold-rolled sheets,
ip brass and bronze. Punching steel
d brass is most troubling bottleneck
a fourth fabricator, although it also
experiencing a shortage of machine
ls.

At the Geneva plant in Utah, number
employees now is above the 2000 mark,
hich compares with employment of
00 at the time the mill was placed on
stand-by basis a year-ago.

At present Geneva operations are be-
hampered somewhat by lack of man-
wer at the coal mine and a shortage of
l cars to transport coal to the coking
ens.

alifornia Aircraft and arts Plants Add Workers

Three major aircraft and parts manufac-
ers in southern California are adding
ployees or increasing backlogs toward
steady expansion of the entire industry,
was reported in Los Angeles last week.

North American Aviation is upping its
oduction force by 3000 persons, it was
ted. The payroll last July 1 stood at
out 6000. Backlog orders of the concern
ve increased from $75 million on June
o $90 million this month. Consolidated
ltee also announces expansion although
specific figures are available.

Menasco Mfg. Co., has received con-
cts for additional gas turbine and jet en-
e production totaling $2,402,700.

Industrial Expansion Slowed in Los Angeles Area by High Costs

Economic growth of area threatened, says spokesman for district industry. Points to high wage costs in relation to other manufacturing districts of nation. Some eastern manufacturers revising West Coast plans

WITH wages in metal trades industries in the Los Angeles area the highest in the nation and with work slowdown programs gaining momentum, economic expansion in this area faces a fight for survival, according to Eltinge P. Brown, general manager, Metal Trades Manufacturers Association of Southern California.

"Already," Mr. Brown told a STEEL reporter last week, "certain eastern plants which started with expansion programs during and since the war have had to alter their original plans, confining operations to assembly rather than production activities.

"Sane American labor leadership, like sane employer leadership, wants good wages, decent working conditions, homes, family life, churches, schools and pleasures.

"But both labor and management know there is no security in a job if the job is threatened with collapse. Such collapse will surely come to our Pacific Coast states unless the present labor costs are quickly reduced to an equitable basis."

Wages Boosted by 57.5 Per Cent

Quoting a survey made by the MTMA, which is being sent to some 400 industrialists throughout the western states, Mr. Brown said that while living costs have advanced 39.4 per cent since January, 1941, (Bureau of Labor Statistics figures), the average wage boost in Los Angeles' machine shops, foundries and fabricated steel works has been 57.5 per cent since the same base date.

Comparing wages in various sections of the nation, the survey report states:

"The metal trades industries on the Pacific Coast pay 74.5 per cent of workers between $1 and $2 per hour; only 24.5 per cent are receiving less than $1 an hour. The next highest area in the country—the Great Lakes states—shows only 47 per cent of workers receiving $1 to $2, and 51.1 per cent being paid less than $1 an hour.

"Other competitive areas, i.e., the Middle Atlantic and New England states, show 39.4 per cent and 41.4 per cent, respectively, as being from $1 to $2 an hour, with 57.6 and 58 per cent receiving less than $1. Thus the Pacific Coast is 27.1 per cent higher than the average of the country in the number of workers receiving $1 to $2 an hour, and 26.3 per cent below the U. S. average for the number working for less than $1 an hour."

Mr. Brown said: "If we are to be realistic we must move immediately toward the goal of reducing our labor costs and increasing our present low rate of productivity. On the latter point there is no proof that West Coast production workers sincerely desire to increase current rates of output.

"Let us examine fairly the cost-of-living picture, on which wage demands are based. Some union leaders have questioned the federal figures of 39.4 per cent increase in living costs since 1941. These have set the actual rise at from 80 to as high as 112 per cent. But so far as the compilers of this report are aware, proof of such rises has never been made. Until better methods are devised and put into execution the current official figures are the only fair computations useful for reference.

"It is time to forget the arguments that because milk goes up 5 cents a quart or bread increases 2 cents a loaf or 12 cents a pound that wage rates must be increased 15 to 18½ cents an hour.

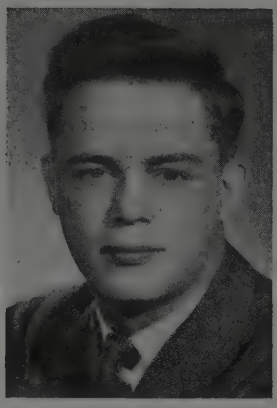
"The fact remains—average earnings in the metal trades of Los Angeles are 18.1 per cent higher than the increase in cost of living since January, 1941. Our wage rates are 11 to 57 per cent higher than elsewhere in this country.

"We are now entering a highly competitive industrial period. Our success depends upon how we meet the competition of local, national and foreign producers. The southwestern states, for example, with labor costs less than eastern, Middle Atlantic or Great Lakes states, may be expected to pour finished products into the West Coast markets at prices much lower than the coast itself can afford to sell them. This merchandise will be no better than ours, yet the cost of producing it will be much lower.

"We will bewail this condition—and organized labor will join with management in condemning this 'foreign' competition—but the show will go on inevitably, and many of our local producers may disappear from the industrial scene forever."

Men of Industry

HENRY J. WALLACE



JOHN W. BAER

J. J. FRIEDLER JR.

Henry J. Wallace has been appointed general manager of sales, National Tube Co., Pittsburgh, subsidiary of United States Steel Corp., New York. He succeeds **W. F. McConnor,** who recently was elected National Tube vice president in charge of sales. Mr. Wallace joined the company in 1928 as a laborer at the Ellwood City, Pa., plant. He took a company training course at the Lorain, O., plant in 1929, and then was a field engineer in the Pittsburgh Sales Division until 1933. Following this, he served in a sales capacity at Indianapolis and Pittsburgh until 1937, at which time he was made manager of sales of the Pittsburgh office. In 1942, he was appointed assistant general manager of sales in charge of ordnance. Since 1945, Mr. Wallace has been sales manager of the company's eastern area with offices in New York. **Arthur Landis** has been appointed superintendent of the company's Christy Park Works, McKeesport, Pa. The plant had suspended operations soon after V-J Day, and is reopening on a restricted basis limited to specialized production of high pressure cylinders. Before joining National Tube, Mr. Landis was vice president in charge of operations of the Orange, Va., factory Snead & Co., Jersey City, N. J.

—o—

August K. Paeschke, grandson of one of the co-founders of Geuder, Paeschke & Frey Co., Milwaukee, has been elected president of the firm, succeeding **Henry F. Millmann** who has been named chairman. **Curt E. Hoerig** and **Lloyd R. Mueller** have been named to vice presidencies. Mr. Paeschke, who served in the Army for 3½ years, joined the company in 1936, and had been a vice president since April, 1945. He is the third generation of his family to head the concern. Mr. Millmann has been with the firm for 56 of its 58 years, and had held the presidency since April, 1945. Mr. Hoerig had been assistant works manager of the company, and Mr. Mueller, division sales manager.

—o—

Ernest S. Theiss has been appointed assistant chief engineer, Davey Compressor Co., Kent, O. For the last 7 years Mr. Theiss was assistant professor, mechanical engineering department, Duke University, Durham, N. C. He was formerly secretary of Region 4, American Society of Mechanical Engineers. He is a member of National Society of Professional Engineers, American Society of Heating & Ventilating Engineers, and Society for the Promotion of Engineering Education.

—o—

Horace D'Angelo, secretary and treasurer, Harry Ferguson Inc., Dearborn, Mich., has been appointed executive vice president of the company.

—o—

John W. Baer, recently released from the Army, has been appointed chief engineer for the Forker Corp., Cleveland. Before entering the service, Mr. Baer served as tool engineer and chief draftsman for the corporation.

—o—

Gail Rutledge has been appointed midwestern regional sales manager, General Detroit Corp., Detroit. He will be located in the corporation's Chicago branch office, and will supervise sales in the states of Illinois, Wisconsin, Minnesota, and South Dakota. Mr. Rutledge joined the firm in 1944, and had recently been assistant to the vice president and coordinator of national accounts and branch operations. **Harold J. O'Neill** has been named to succeed Mr. Rutledge as assistant to the vice president and c ordinator of national accounts. M O'Neill joined the corporation in 194 as manager of the CD-Sno Fog Divisio General's carbon dioxide extinguish plant. Later he became field manage working out of the midwestern office Detroit. He then became Central Stat zone sales manager for Michigan, Ohi Wisconsin and Kentucky.

—o—

J. J. Friedler Jr., southern district ma ager, Ilg Electric Ventilating Co., Ch cago, has been elected to the board directors of the company. Mr. Friedl has been associated with the Ne Orleans office of the Ilg company f more than 20 years. He entered th office as a salesman, and in 1928 w named New Orleans branch manage More territory was placed under h supervision, and in 1930 he was appointe southern district manager. **G. C. Jelliff** recently released from the Navy, h been appointed direct assistant in th New York office to **P. D. Briggs,** vic president and general manager of th company. **Keith P. Ribble** has bee placed in charge of the Houston, Tex office of the firm, under Mr. Friedler direction. Mr. Ribble had been with Al lis-Chalmers Mfg. Co., Milwaukee. Du ing the war he served with the Wa Production Board. **E. B. Bomar** has bee placed in charge of the Phoenix, Ariz office of the Ilg company. He w a sales engineer in that area for sever years.

—o—

William J. Digges has been appointe field assistant in the New York and Ne Jersey regional office, United States De partment of Labor. He will act as info mation officer for the Wage and Hour an Public Contracts Divisions, Office of th

The Rocky Mountain Rocket of the Rock Island Lines.

SPEED AND DEPENDABILITY PLUS *Styling*

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The Public demands modern appearance . . . style as well as performance. The famous Rocky Mountain Rocket of the Rock Island Lines amply meets these requirements. The Pullman-Standard Car Manufacturing Company, builder of the Rocket Pullmans, gives its cars up-to-the-minute styling . . . the look of speed . . . with stainless steel sheeting fastened with stainless steel screws.

More and more products every day turn to stainless for modern styling —railroads, food equipment, appliances, instruments and many others —and more and more manufacturers look to Harper for stainless steel fastenings which resist rust and corrosion.

Harper maintains a stock of more than 4850 types of ***Everlasting Fastenings***—Bolts, Nuts, Screws, Washers and others, fabricated from Brass, Naval Bronze, Silicon Bronze, Monel and Stainless Steel. Special engineering facilities serve product manufacturers through Harper factory branches and distributors in principal cities.

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Solicitor, Conciliation Service, Bureau of Labor Statistics, U. S. Employment Service and Women's Bureau of the Department of Labor in the region. Mr. Digges had been information director of the New York Regional War Labor Board from 1943 until its termination last December. Subsequently he was assistant to the chairman of the regional Wage Stabilization Board, and assistant director of public information of the National WSB in Washington.

—o—

Quentin D. Mehrkam has joined the staff of Ajax Electric Co. Inc., Philadelphia, a division of Ajax Metal Co. of that city. Mr. Mehrkam will be engaged in developing new processes and experimentally heat treating manufacturers' specimen work in the company's research laboratory. He had been a production metallurgist with Thompson Products Inc., Cleveland.

—o—

Sam Wolff has been placed in charge of the new St. Louis district office, Luria Steel & Trading Corp., New York. He had been with Standard Steel & Rail Co. Inc., St. Louis. **J. R. Snelson** will be associated with Mr. Wolff in Luria Steel's St. Louis office. Mr. Snelson had been with the purchasing department of Granite City Steel Co., Granite City, Ill.

—o—

Howard J. Ward has been appointed district manager for the Michigan territory, Udylite Corp., Detroit, succeeding **William H. Ross** who recently resigned. Mr. Ward has been with the company for the last 10 years, and during the war spent most of his time in Washington working on plating problems with Army and Navy engineers.

—o—

David F. Kahn, former president of Estate Stove Co., Hamilton, O., and **Dr. Boris Emmet**, former national retail merchandising manager of Sears Roebuck & Co., Chicago, have been named directors of Noma Electric Corp., New York. Dr. Emmet will be special merchandising adviser to the company's president, **Henri Sadacca**. Other directors named were **Leo L. Pollak** and **Carl Schlesinger**, former president and vice president, respectively, of Pollak Mfg. Co., Arlington, N. J., which has just been merged into Noma.

—o—

D. Frazer Sullivan has been elected a member of the board of Graham-Paige Motors Corp., Detroit.

—o—

Edwin Gebauer has joined the engineering department of Pollak Steel Co., Cincinnati.

—o—

C. B. Ball has been appointed branch manager in Birmingham for Le Roi Co., Milwaukee.

—o—

W. R. Elwell has been appointed to the newly created position of merchandising department buyer, Snap-On Tools Corp., Kenosha, Wis. He had been sales engineer with the company.

—o—

Thomas E. Brown has been appointed assistant superintendent of the Bacchus, Utah, plant, Hercules Powder Co., Wilmington, Del. Mr. Brown joined the company in April, 1939, and had been dynamite supervisor at the Hercules, Calif., plant since July, 1944.

—o—

J. C. Leonard has been appointed sales manager, Industrial Marketing Division, Oakite Products Inc., New York. He will direct the marketing and servicing activities of Oakite's industrial field staff. Mr. Leonard has been with the company for more than 22 years, and for the last 16 of these had been manager of the Chicago Division.

—o—

William M. North has been promoted from assistant secretary to secretary, National Gypsum Co., Buffalo, succeeding the late **Frank E. Davis**. **Bern L. Wootten** has been elected assistant secretary of the company, and **Ray La** has been named assistant treasurer. B were with National Gypsum prior their appointments.

—o—

Warren C. Olson has been promo to secretary and comptroller gene Charles H. Besly & Co., Chicago, s ceeding **Henry N. Wade** who served secretary of the Besly organization 50 years prior to his death last mon Mr. Olson has been in Beloit, Wis., w the Besly company since 1942.

—o—

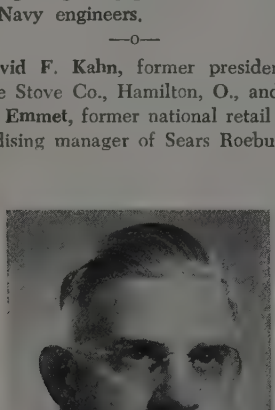
H. Bruce Wilson has been appoint manager of industrial relations, Pit burgh Limestone Corp., Pittsburgh, s sidiary of United States Steel Corp., N York. **Henry R. Baltzersen** has be named comptroller and assistant secreta of the Limestone corporation, and Ra mond W. Long, assistant comptroller. Wilson joined the company in 1922, a became assistant to supervisor of ind trial relations in the company's gene offices in Pittsburgh in 1935. He b been secretary and auditor of the co pany since 1940. Mr. Wilson is a me ber of Controllers Institute of Americ and National Association of Cost A countants. Mr. Baltzersen was assista auditor for the company since Nove ber, 1943. He joined United Stat Steel Corp. of Delaware as senior aud tor in March, 1943. He is a member National Association of Cost Accountan Mr. Long has been eastern district b reau chief of the Audit Division of Ca negie-Illinois Steel Corp., Pittsburg since April, 1945.

—o—

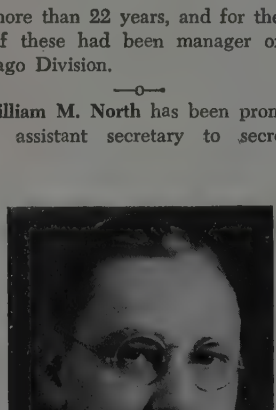
Keith Hopkins, supervisor of the ca order section of the traffic departme Caterpillar Tractor Co., Peoria, Illino has been named assistant traffic manag of the company. He has been with t company since 1936. In his new pos tion, Mr. Hopkins will share the du ies assistant traffic manager with **Roy Rhodes**, who has served in this capaci for several years. Mr. Rhodes will devo his attention to rate matters, while M Hopkins will handle all duties other tha those concerned with rates.

—o—

John W. Cavanaugh, a Chicago atto ney and a partner in the law firm McDermott, Will & Emery, has bee elected a member of the board of direc tors of Ekco Products Co., Chicago. He also a director of Whiting Corp., Harve Ill., and South Bend Lathe Works, Sout Bend, Ind. He will fill a vacancy Ekco's board, created when the membe ship was increased from five to six la



HOWARD J. WARD

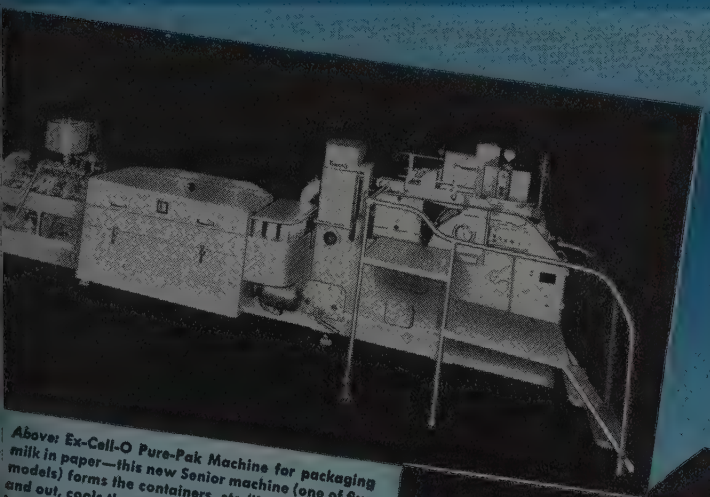


J. C. LEONARD

DIVERSIFIED ? *Yes...*

XLO

EX-CELL-O *for* PRECISION



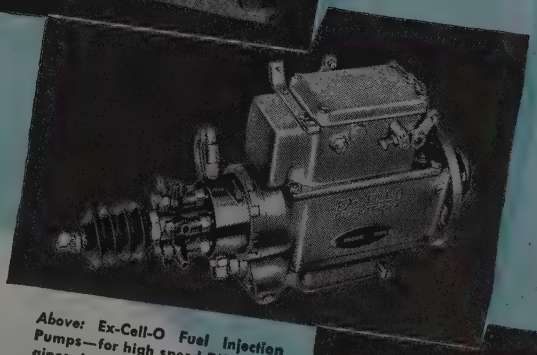
Above: Ex-Cell-O Pure-Pak Machine for packaging milk in paper—this new Senior machine (one of five models) forms the containers, sterilizes them inside and out, cools them, fills, seals and dates them—all in one continuous, automatic operation in the dairy. Pure-Pak containers for dairy products are now being used at the rate of more than one billion containers a year.

To Right: Ex-Cell-O engineering services and precision machines are being used by many American industries for the mass production of accurately-made parts and sub-assemblies. Shown is Ex-Cell-O special machine for broaching and reaming 18 holes and drilling 36 holes in a magnesium crankcase.

. . . the pioneering spirit at Ex-Cell-O remains undaunted!

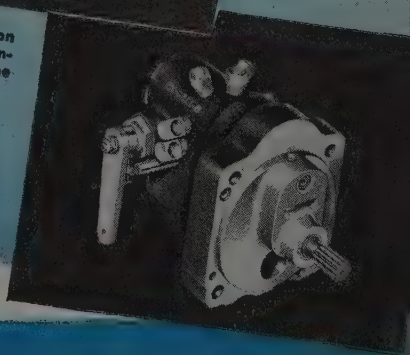
. . . an opportunity to reaffirm our company's allegiance to the pioneering spirit that brought it into existence. It is a spirit that maintained Ex-Cell-O unfailingly during the economic extremes of the twenties and the thirties, and that enabled the company, during the early forties, to make a worthwhile contribution to our nation's war effort. I can say in all sincerity that the same spirit impels the whole Ex-Cell-O organization of today . . . a clear assurance of the active role that Ex-Cell-O will play in the peacetime years immediately ahead.*

**from a message by Phil Huber, President and General Manager of Ex-Cell-O Corporation, on the occasion of the company's 25th Anniversary . . . as timely and significant now as when given in 1944.*



Above: Ex-Cell-O Fuel Injection Pumps—for high speed DIESEL engines in the automotive, marine and industrial fields.

To Right: Ex-Cell-O GASOLINE Injection System for aircraft engines—the advantages of gasoline injection make flying safer, easier, and more economical and enjoyable.



EX-CELL-O CORPORATION • DETROIT

Manufacturers of Pure-Pak Paper Milk Bottle Machines, Aircraft and Miscellaneous Production Parts, Precision Machine Tools and Equipment, Continental Cutting Tools, Fuel Injection Equipment, Universal Dowell, and Drill Jig Bushings.

July by amendment of the corporation's by-laws. **Ronald Goodman,** recently released from the Army, has been named to the newly created post of publicity manager for Ekco Products Co. He will co-ordinate all publicity activities for Ekco's seven plants in the United States, two subsidiaries in England, and Ekco Products Co. (Canada) Ltd.

—o—

George W. Putnam has been appointed district manager of the Central District, Republic Steel Corp., Cleveland, succeeding **C. W. Meyers** who has resigned to become president of Colorado Fuel & Iron Corp., Denver. **Walter M. Farnsworth,** divisional superintendent, and **E. R. Johnson,** district chief metallurgist, have been named assistant district managers of Republic's Central District. Mr. Putnam joined Republic as open hearth superintendent of the Youngstown District in 1933. In 1937 he was made assistant district manager of the Warren District, and 2 years later assistant district manager of the Central District, which position he held at the time of his new appointment. Prior to his association with Republic Steel, Mr. Putnam had been with American Rolling Mill Co., Middletown, O. Mr. Farnsworth, in addition to being assistant district manager of the Central District, will be assistant district manager of the Chicago District and will have charge of the electric furnace operation in both districts. He joined Republic's predecessor company in 1925, and has served as superintendent of the No. 1 electric furnace melt shop, as divisional superintendent in charge of the Canton Steel Division, and divisional superintendent in charge of the Canton Steel Division blast furnace and coke plant. Mr. Johnson joined Central Steel Co. in 1925, and had been chief metallurgical engineer since 1944.

—o—

L. A. Hester has been appointed manager of the Transportation Division, Middle Atlantic district, Westinghouse Electric Corp., Pittsburgh. He will have headquarters in Philadelphia. **R. F. Moon,** who formerly held the post, has been appointed special representative. Mr. Hester joined Westinghouse in 1923, and served in various capacities with the transportation branch before his present appointment. Mr. Moon has been with the Transportation Sales Division at Philadelphia during most of his Westinghouse employ.

—o—

Stuart D. Distelhorst, recently released from the Army, has returned to his position as sales promotion manager with Cochrane Corp., Philadelphia. During Mr. Distelhorst's absence of almost 4 years, his department was under the direction of **Joseph S. Oldknow,** personnel manager of the company. Mr. Oldknow continues with layout and production of advertising and other printed matter, in addition to his personnel management work.

—o—

Albert G. Black, economist and former professor at the University of Minnesota, Minneapolis, has been appointed special assistant in the Department of Commerce to handle northeastern state regional problems. He will work with federal and state agencies in his new post.

—o—

P. M. Dinkins, associated with American Cyanamid Co., New York, since 1923, has been made president of Jefferson Chemical Co. Inc. Jefferson was organized in 1914 by Cyanamid and The Texas Co. to produce chemicals from petroleum and petroleum gases.

—o—

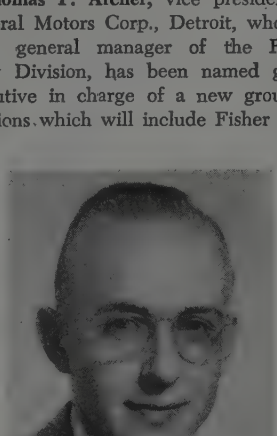
C. H. Hedenberg has been named operations manager of Goodrich Svenska Gummi, Aktiebolag, Stockholm, Sweden, subsidiary of International B. F. Goodrich Co. Mr. Hedenberg has had 12 years' experience in the rubber industry in Sweden.

—o—

Harry A. Trishman has been appointed manager, Hydraulic Division, Erie Foundry Co., Erie, Pa. For 20 years he had been chief engineer with Adamson United Co., Akron, subsidiary of United Engineering & Foundry Co., Pittsburgh.

—o—

Thomas P. Archer, vice president of General Motors Corp., Detroit, who has been general manager of the Fisher Body Division, has been named group executive in charge of a new group of divisions which will include Fisher Body Division, Ternstedt, and Buick-Oldsmobile Assembly Division. **L. C. G** vice president, who has been in ch of Buick-Olds-Pontiac Assembly Divi and of the Dayton and Household pliance Divisions, becomes general m ager of the Fisher Body Division, inc ing Ternstedt. **B. D. Kunkle,** vice p dent, will be in charge of the Da and Household Appliance Divisi **C. B. Stiffler,** who has been Mr. Gc assistant, will be assistant to Mr. Kur



R. E. THOMAS
Who has been appointed purchasing agent, Dumore Co., Racine, Wisc., noted in STEEL, Aug. 26 issue, p. 70.

—o—

William J. Wade has been appoi head of the distribution planning gr of Willys-Overland Motors Inc., Tol O. Prior to 1937 he worked as an perimental engineer for Surface C bustion Corp., and for De Vilbiss both in Toledo, O. From 1937 u 1941, he was with Spicer Mfg. Co Toledo, as a designer. Mr. Wade recently released from the Army.

—o—

J. G. Ripstra and **Richard J. Skillr** have been appointed to the field s staff, Banox Division, Calgon Inc., Pi burgh. Mr. Ripstra will work out the company's Detroit office, cove Detroit, Grand Rapids, Mich., Chica Milwaukee and other cities in that a Mr. Skillman, working out of the Ph delphia office, will cover the eastern s board. Mr. Ripstra was with Ha Mfg. Corp., Grand Rapids, holding posts of chief chemist, process engin and finish engineer. Mr. Skillman released from the Navy in March. Pr to naval service, he was a sales engin with General Refractories Co., Phi delphia.

—o—

Don M. Compton, formerly chairm Foote Bros. Gear & Machine Corp., C cago, has been appointed chief of Chicago Ordnance District, succeedi Col. Joel G. Holmes who is being tra ferred to Joliet, Ill., as field director ammunition. During the war, Compton served the ordnance depa ment as deputy director of the safe and security division in the office of t chief of ordnance, Washington. C Holmes, during his 10-month tenure chief of the Chicago Ordnance Distri completed major termination activiti His new duties will be to direct amm nition programs in the country.

—o—

Dr. Simon Freed, former assista chemistry professor at the University Chicago, has been appointed chief chem ist at the Monsanto Clinton Laboratori Oak Ridge, Tenn. The laboratories a operated by Monsanto Chemical Co., S Louis, under contract with the Manha tan District, as a research center in co nection with the Oak Ridge atomic en

CLARENCE H. COLLIER JR.

inted manager, Industrial Lift Truck East-Division, Hyster Co., Portland, Oreg., oted in STEEL, Sept. 9 issue, p. 110.

KENNETH F. THOMAS

District engineer, New England office, Kaydon Engineering Corp., Muskegon, Mich., noted in STEEL, Sept. 2 issue, p. 90.

J. HUBERT CUNI

Personnel director, Lodge & Shipley Machine Tool Co., Cincinnati, noted in STEEL, Sept. 9 issue, p. 110.

development program. Dr. Freed been invited by the Physical Society e Netherlands and the government e Netherlands to take part in the national Conference on Physics, nemorating the fifteenth anniversary e discovery of the Zeeman Effect in ic spectra.

—o—

rl I. Schweizer, chief metallurgist, Improvement & Forge Co., Cleve- has been named to head the com- 's newly established Turbine Forg- Division. The division will special- n parts of high temperature alloys red for gas turbines and turbo- rchargers. Mr. Schweizer has de- l the major part of his time the 3 years to working out methods for ng the newest alloys. Until 1940, he been with American Steel & Wire Co., Cleveland, subsidiary of United States Steel Corp. **Arthur Zimmerman** has been appointed sales manager of Steel Improvement & Forge Co. He was with Weatherhead Co., Cleveland.

—o—

Freeman H. Dyke, assistant general manager, located in Steubenville, O., of Wheeling Steel Corp., Wheeling, W. Va., will preside over sessions of 10,000 steel mill executives when the Iron and Steel Exposition opens in Public Hall, Cleveland, Oct. 1. The Association of Iron & Steel Engineers will hold its annual convention in conjunction with the exposition.

—o—

Carl W. Meyers, long prominent in the steel industry, has been elected president of the Colorado Fuel & Iron Corp., Denver, succeeding E. Perry Holder, resigned. Mr. Meyers resigned as manager of the Central District, Republic Steel Corp., to accept his new post, effective Sept. 10. He became associated with the Upper Works of Carnegie Steel Co. at Youngstown in 1907, beginning as a roll hand in the bar mill. In 1918 he was transferred to the McDonald Works of the company where he stayed until 1931, the last eight years as superintendent. In that year he joined Republic Steel Corp. as superintendent of the rolling mill in Chicago, and two years later was named roll engineer for the corporation. In 1934 he was transferred to Canton, O., as assistant manager of Republic's Central District, and in 1937 was appointed manager of the district, the post he resigned to go with Colorado Fuel & Iron Corp. He will maintain offices at 500 Fifth Ave., New York, and also in Denver.

ITUARIES....

vid C. Ericson, 55, former assistant e president of Jack & Heintz Pre- Industries Inc., Cleveland, died in city, Sept. 7. He was in charge of asting production at Jack & Heintz e he retired 10 months ago.

—o—

n Clifford Cotter, 64, sales man- for 22 years, Merrill Bros., Brook- N. Y., died recently.

—o—

nk G. Hanny, 48, personnel man- Aurora Pump Co., Aurora, Ill., died at city, Sept. 3.

—o—

than Paley, 73, president, Paley ers Co., Madison, Wis., died re- y in that city.

—o—

nk Martin, 63, Philadelphia rep- tative of Spencer Turbine Co., ford, Conn., died in Philadelphia, Sept. 3. He had been with the New York office of the company for 9 years before joining the Philadelphia office in 1932.

—o—

John J. Wharam, 52, chief passenger car engineer, Ford Motor Co., Dearborn, Mich., died in that city, Sept. 5. He joined Ford in 1921 and worked continuously in various engineering capacities.

—o—

Henry L. Robinson, 64, sales manager, Laramie Machine Works, Cicero, Ill., died in Maywood, Ill., Sept. 7.

—o—

William E. Sharp, 68, traffic manager, Niagara Falls Smelting & Refining Corp., Buffalo, died in Kenmore, N. Y., Sept. 2.

—o—

Thomas A. Laux, 62, assistant to the general manager of sales, Fabricated Steel Construction Division, Bethlehem Steel Co., Bethlehem, Pa., died at his home in that city, Sept. 6. He joined Pennsylvania Steel Co. in 1909, and that company became a part of the Bethlehem Steel organization in 1916.

—o—

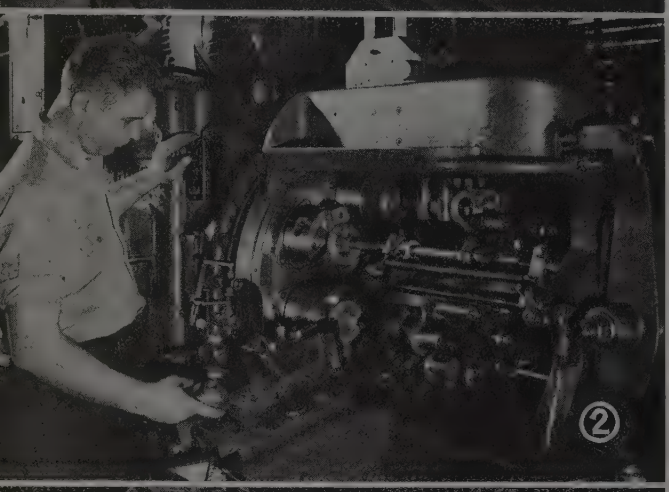
William H. Vannatta, 60, assistant comptroller, Bethlehem Steel Corp., Bethlehem, Pa., died at his home in that city, Sept. 3. He joined the company in 1918, and had been assistant comptroller since 1943.

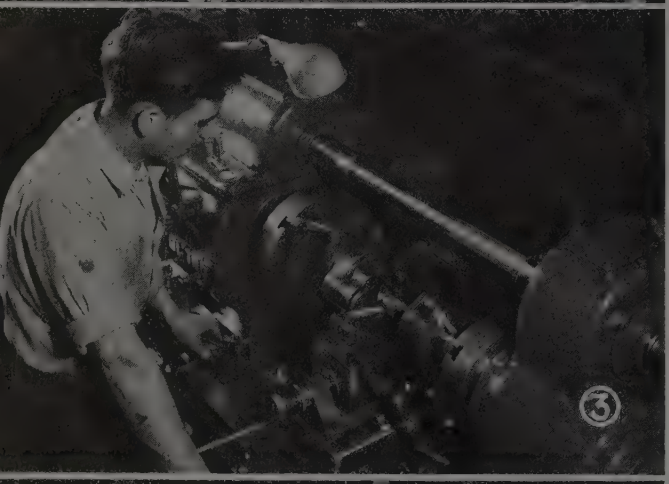
—o—

Fred Otto Volz, 49, vice president and sales engineer, Lakeside Bridge & Steel Co., Milwaukee, died Sept. 6. In years of service, he was the oldest employee of the Lakeside company. He was a member of American Welding Society.

—o—

G. Howard Estey, 73, president and co-founder of Estey Bros. Co., Brooklyn, died recently at his home in that city. With his brother, S. Raymond Estey, he founded the company in 1904.





Machining Compres

USUALLY thought of as a manufacturer of gas r geration, air conditioning and automatic water hea equipment, Servel Inc. of Evansville, Ind., is also on the largest producers of reciprocating type compresso a component of electric refrigeration—in the cou These factory-sealed supermetic motor-compressor ass blies, encased in a steel shell, are mounted with conde receiver, fan motor and accessories on a rigid steel b completely connected and ready to install.

Models in production are in the fractional horsepo range for such uses as farm and home freezers, s fixtures, milk, beverage, room and water coolers, in trial cooling and vehicle refrigeration.

Each unit has force feed lubrication on every bear wrist pin and piston. Suction and discharge are mul to unusual perfection in noise and vibration reme precisions under 0.0001-in. and to a 5 microinch fi

Main parts of the factory-sealed compressor, other t the motor units, are produced within the Servel pl Control of such volatile and fugitive gases as F (Freon) demands precision of unusually close toleran The most modern landing and honing techniques are volved.

In 1939 the company decided to market this line supermetic commercial condensing units and an inv gation was started to determine types of machine t necessary to produce the volume and quality desi Continuing until the end of the war, this investigation cluded precision gaging methods which would ass attaining and maintaining the accuracy and finishes volved in the production.

To detail all of the production, gaging and inspec operations involved in the manufacture of the compre would entail use of a great amount of space. It is thou that the nineteen production steps necessary to prod the compressor crankshaft of the accuracy and finish quired will present a fairly good picture of the mach tool equipment involved, and the characteristics of company's high speed production routing.

The crankshaft forgings (*Please turn to Page* 1

Fig. 1—Forged crankshafts about to be stress relieved a a temperature of 900° F

Fig. 2—Bearing plates, shown here, crankshafts and pis tons are produced on Baird 6-spindle semiautomatic chucking machine

Fig. 3—Specially built LeBlond indexing lathe for ma chining pin bearings

Fig. 4—Deep hole drilling machine for drilling oil passage hole to depth of 6 15/32-in., four shafts at a time. Ma chine is timed so drills clear automatically before chip loading can cause drill breakage

pecial machining setups are used in Servel lant to finish crankshafts accurately to tolerances and quantities required

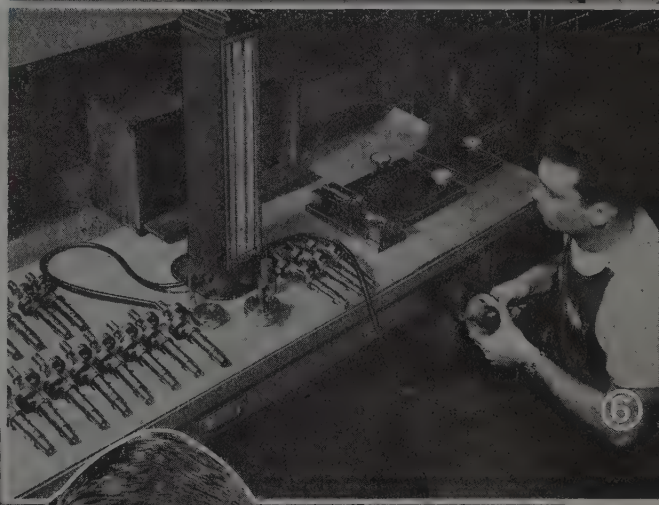
rankshafts

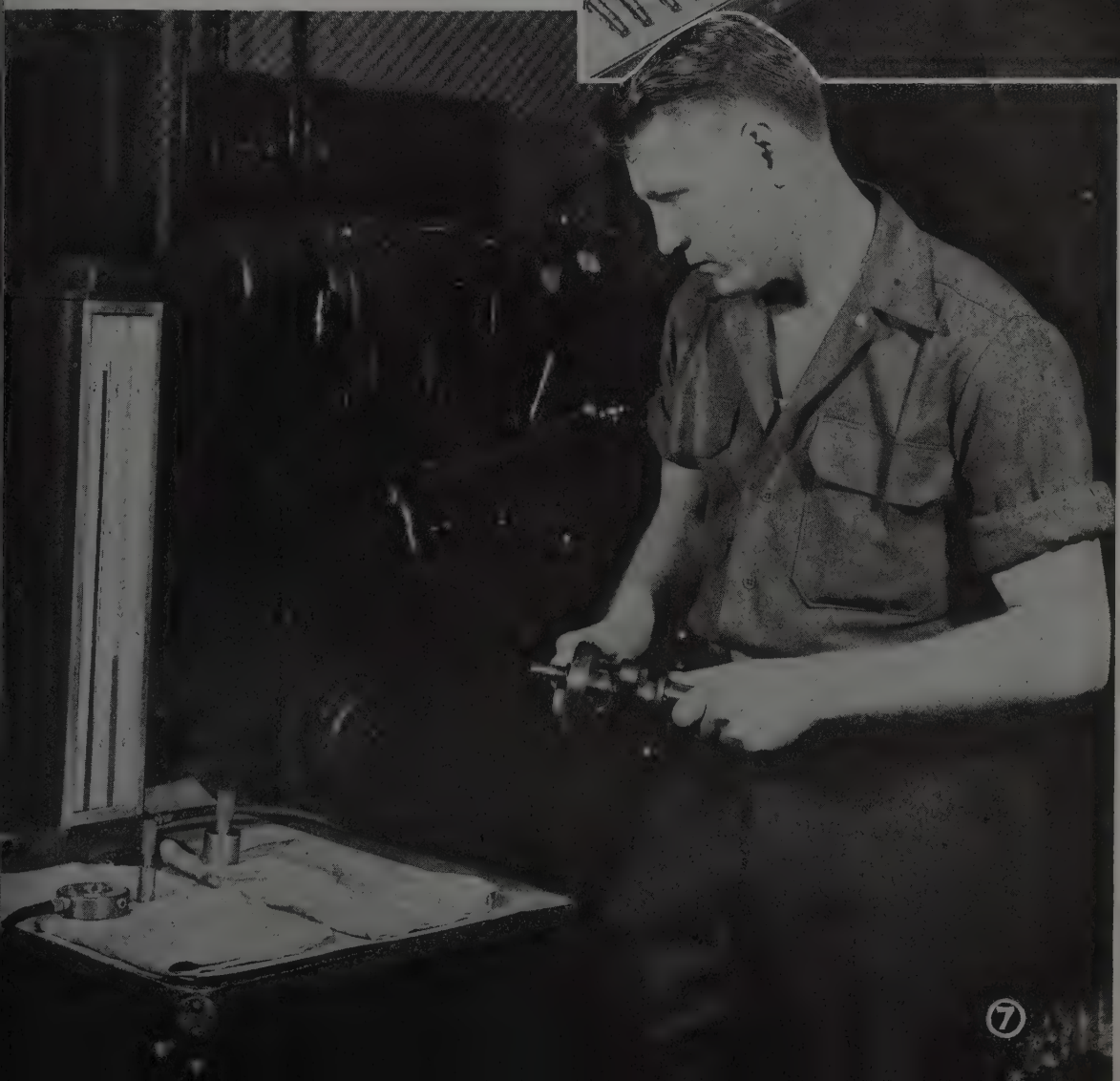
By G. ELDRIDGE STEDMAN

ig. 5—Induction hardening of all bearings on shaft to a C scale rockwell hardness of 60 to 62

ig. 6—Finished crankshaft being thoroughly checked on all dimensions with gaging equipment as shown

ig. 7—Checking grinding tolerances with air gages raduated to 0.00005-in. Bearings are round to a tolerance of 0.0005-in.

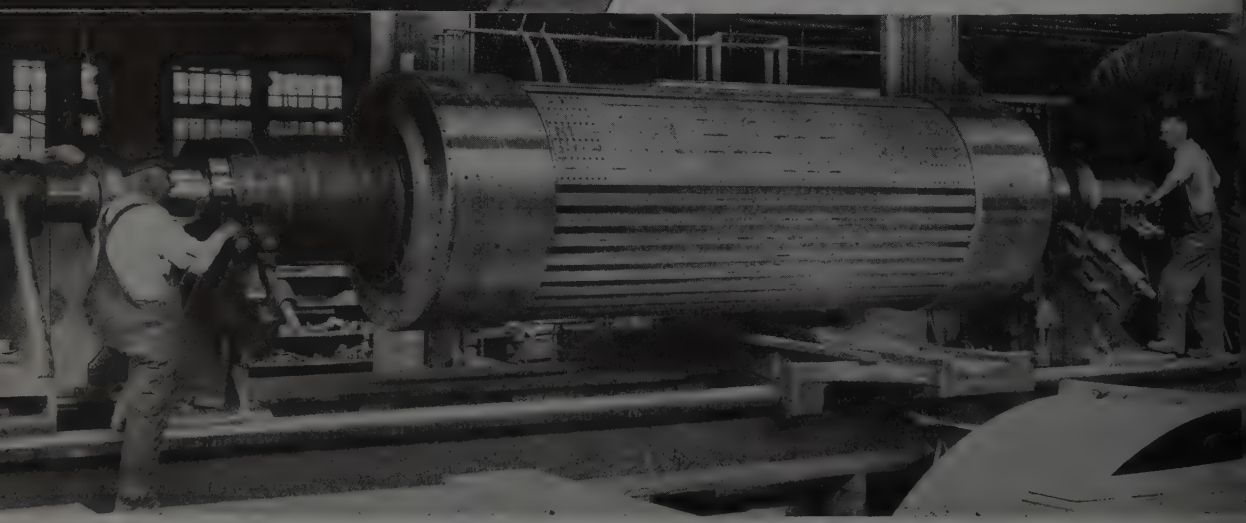




Testing Cylindrical Forgings

By J. E. PETERMANN
Mechanical Engineer
Electrical Department
Allis-Chalmers Mfg. Co.
Milwaukee

Method of strengthening th rotor coil retainer rings for turbo generators by plastic deforma tion evolves as part of stati tests which subject thin-walle chromium-nickel alloy to stresse approaching yield strength



VERSPEED testing of rotating parts frequently presents many problems. To overcome these a method has been devised by W. B. Cart, mechanical engineer the Allis Chalmers Mfg. Co. for static testing thin lled cylindrical forgings which are subjected to stresses proaching the yield strength of the material.

The test consists of subjecting the cylinder to a high ernal pressure, which stresses the forged ring beyond yield strength. A two-fold purpose is accomplished this test: (1) The forging, if not up to par, will show s of failure such as surface cracks on either the e or outside surface; also a poor stress strain curve will lt; (2) by cold working the ring, the yield point of material is increased. While raising the yield point ductile materials by cold working is a relatively common ctice, this method of strengthening of rotor coil reing rings on turbo-generators by plastic deformation nique.

Due to the fact most present day turbo-generators are rated at either 1800 or 3600 rpm, the rotating field rotor operates under very high stresses. Among the nest stressed parts of a rotor of this type is the rings ch keep the ends of the coil (which extend beyond the r body) from flying radially outward. Approximately -thirds of the stress on a typical high speed ring actually aused by its own weight. For electrical reasons it has n found a real advantage in most cases to make these s of a nonmagnetic steel. Therefore, an austenitic me-nickel alloy was selected.

ypical physical requirements of these rings are:

Tensile strength	120,000 psi.
Yield Strength	100,000 psi.
Elongation	20 per cent
Reduction in Area	30 per cent

Forging this material to give the properties required is very difficult and requires extremely close control in production. If the forging temperature is too high, the proper physicals cannot be obtained and if it is too low the forging will crack and will probably be so hard that machining will be out of the question. This gives us another good reason for the pressure test as a check on the forging, because if the parts described here should fail in service it would mean that damage would be done amounting to many thousands of dollars.

The first step in testing a cylindrical forging is to take a test coupon from each end of the cylinder. The coupons are then made into test bars in the materials test laboratory and the standard pull test is performed. If the results of these tests are satisfactory, further tests on the rough forging proceed. An example of typical satisfactory test bar results might read as follows:

Tensile Strength	137,500 psi and 145,250 psi
Yield Strength (.1% set)	106,750 psi and 102,250 psi
Proof Stress	97,750 psi and 93,750 psi
Elongation	33 and 23.5 per cent
Reduction in area	28 and 26 per cent

Difficulty may result, however, from basing conclusions on the physical properties of the test bars alone, since the bars are taken from the ends of the forging and do not necessarily give a true picture of the forging as a whole. Therefore, the next test is performed on the entire forging in its rough machined state.

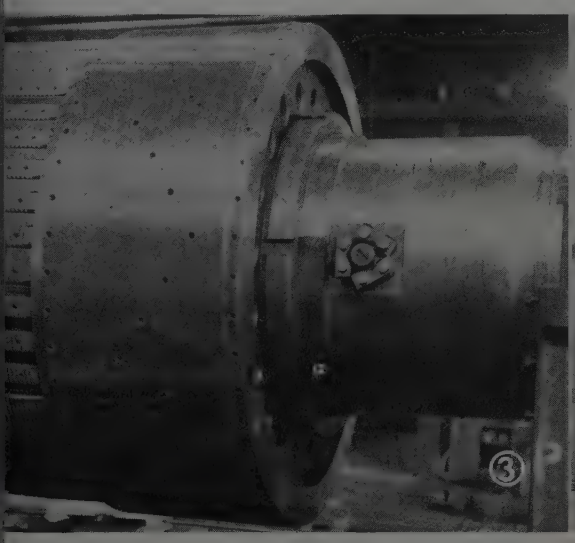
The test set up is shown in Fig. 6. The entire equipment takes little space and is light enough to be moved about in the shop quite easily. Item 1 is the cylinder to be tested. Item 2 is the internal heavy cylinder which is part of the testing. The space between item 1 and 2

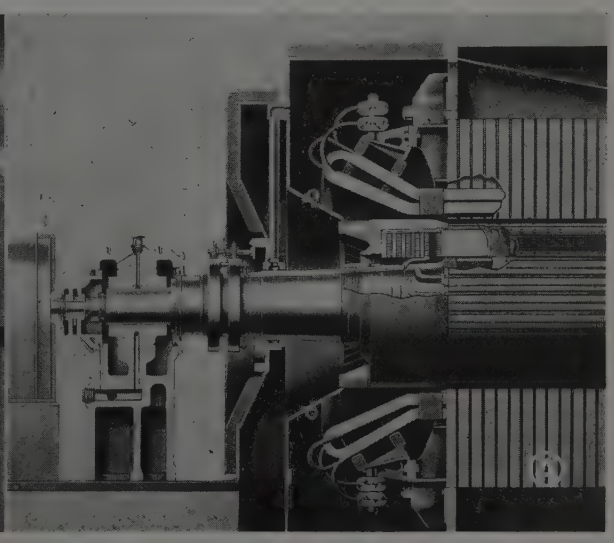
Fig. 1—Axial crack in bore of this rotor coil retaining ring developed during pressure testing. Previous physicals on forging test coupons showed acceptable results

Fig. 2—Rotor end rings on this 1500 rpm 25,000 kw generator rotor are over 4½ ft in diameter and 2 in. thick

Fig. 3—Closeup of the rotor end ring of an 1800 rpm 80,000 kw generator rotor. Rings such as these formerly were imported, but a few years before the war Allis-Chalmers began making its own rings. Overall rotor diameter and resultant internal running stresses can be reduced greatly by making rings from nonmagnetic steel

Fig. 4—Cross-sectional view of end of typical generator showing rotor coils and retaining ring





is the oil chamber. Item 3 shows the method of sealing the oil under pressure, the main feature of this seal is the U leather which is the main seal. Item 4 illustrates the stud bolts which are used to hold the assembly together. Item 5 is the pressure gage and item 6 is the high pressure pump, manually operated for close control.

When the test rig is completely set up with the forging to be tested in place, dial indicators (not shown) are placed around the circumference of the forging at the axial center of the forging and are set at zero. Pressure is then applied to test the ring in 1000 lb steps, except near the yield strength point where readings are taken at every 500 lb increase in pressure. At each increment of pressure increase, the indicators are read and values are recorded. The maximum pressure used is a pressure which is calculated to slightly exceed the yield point. We have been successful in sealing oil under pressures of 14,000 psi. The indicator readings are then averaged and curve, pressure vice versa radius expansion in inches plotted. This gives a typical stress-strain curve, such that shown on the left in Fig. 5.

The forgings are usually subjected to two cycles pressure testing. Examination of the curves readily sh the effect of cold working with the increased yield stren and elastic limit.

The formula used for figuring the stress and press relationship in a thin walled cylinder is as follows:

$$S \text{ (at bore)} = \frac{R^2 + r^2}{R^2 - r^2} (P)$$

Where S = stress in psi
R = outer radius in inches,
r = the inner radius in inches
P = pressure in psi

After pressure testing, the (*Please turn to Page 1*

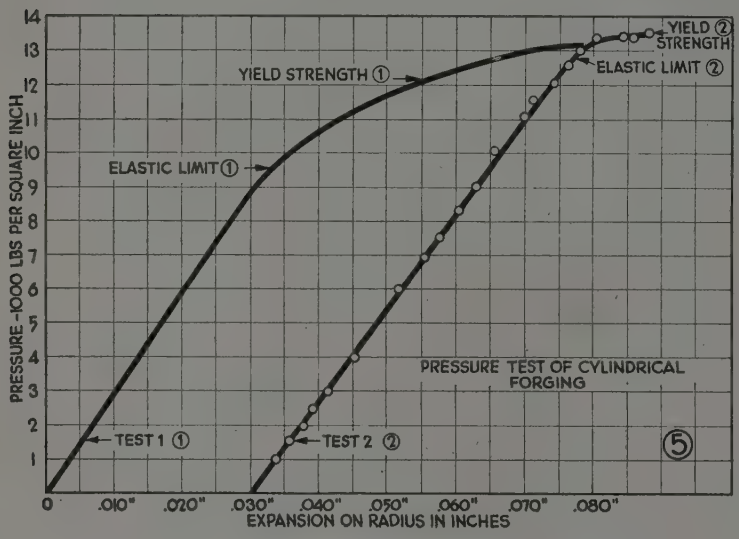
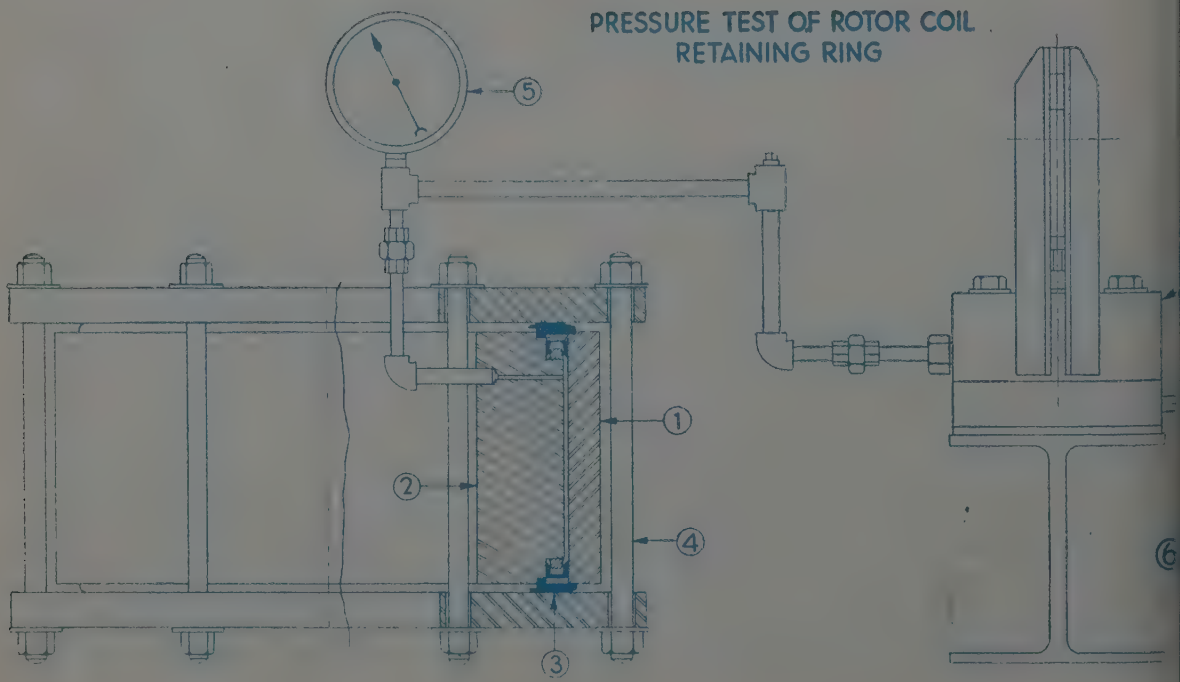


Fig. 5—Typical stress-strain curve developed by test

Fig. 6—Schematic of setup for pressure testing rotor coil retaining rings. Item 1 is cylinder for testing; 2 is heavy cylinder and part of test rig; 3 illustrates method of sealing oil (U leather) under pressure; 4, are stud bolts to hold assembly together; 5 is pressure gage; and 6 is high pressure pump, manually operated to obtain close control



Engineering News *at a Glance*

LATEST addition to the Springdale generating plant West Penn Power Co. is an 81,250 kva Westinghouse erator which raises capacity of the plant to approxitely 300,000 kw, sufficient to satisfy the needs of over f the entire West Penn system supplying electricity western Pennsylvania. Besides being one of the largest chines in the system, it also is one of the largest units nufactured and installed to date for operation at 3600 n.

FIRES on diesel-electric locomotives, that might be pped to dangerous proportions in winds caused by eamliner" speeds, are detected promptly and exguished by new equipment installed on engines that such famous Florida trains as the Silver Meteor, Queen and Palm Land for the Seaboard Air Line way. The equipment, developed by C-O-Two Fire ipment Co. and Pyrene Mfg. Co., turns a diesel-elec- locomotive into a veritable "fire-engine-on-wheels" e the apparatus automatically kills both smoldering and -burning fires underneath or inside the locomotive and inside the cab.

BASIS for a new contract parts service now offered Square Surface Plate & Tool Inc., Detroit, is a specialized ss unit that produces difficult multidiameter parts of ually any length at an extremely low production cost. means of this attachment, which goes on any lathe, company states it is able to produce parts from a needle nt to ⅝-in. in diameter to almost any form with semi nskilled labor. Another feature contributing to eco- y as well as exceptional accuracy is the unusually low of tooling. Form to be produced is ground on a small cam which is inserted into the machine and serves feed guide. By storing the cam for each job, it is ible to duplicate any job literally at a moment's notice. kind of cold finished stock can be handled, including less, ordinary cold-rolled steel, brass, aluminum etc.

N making parts for Packard superchargers, Warner & sey Co. of Cleveland discovered GE Calrod heaters ient aids in removing copper plating which was lied to keep certain part surfaces in a relatively soft . Method employs a series of four stripping tanks— filled with the stripping chemicals and electrically ed with the heaters, and two filled with water for ng. Heated tanks removed the plating previously ap- l for an earlier hardening process. Installation not was simplified, but also fire and fume hazards were inated by the heaters.

LL manganese steel welded type dippers currently ufactured by American Manganese Steel Division of erican Brake Shoe Co., Chicago, are reported to meet ands for a dipper with optimum durability and overall ht. Overlapping, rabbeted joints in the design, ide grooves for a welded bead. Parts then are fitted together with round plugs, around which weld metal is deposited. Consequently, body of the all manganese dipper is as strong and homogeneous as if made in one piece. At the same time, the company reports, it is possible to remove a worn front and reweld a new one in place without destroying the back.

TWO new low-temperature silver brazing alloys currently offered by Handy & Harman of New York, are said to offer advantages of alloys with a higher silver content, but at the same time provides an economy to help offset the increase in price of silver. Its 45 per cent silver alloy, which also contains copper, zinc and cadmium, features a new low melting range of 1120 to 1145° F, and joints produced between ferrous and nonferrous metals are strong, ductile and leak tight. The 35 per cent alloy has a wider melting range—1115 to 1295° F—and is free flowing at an exceptionally low temperature.

RESOURCEFULNESS of naval technicians converted a great wartime plant in Maspeth, Long Island, to peacetime production, thus possibly saving it from becoming a white elephant on the hands of the Defense Plant Corporation. There essential Navy *materiel* either damaged by wear or by superficial impairment while in storage is being made fit for reuse, and already has netted the national treasury many millions of dollars.

PLASTICS material that is made to shrink on handles and grips of pliers, wrenches and wire cutters is one of the latest developments announced by the Chemical Department of General Electric Co., Pittsfield, Mass. The material is applied after it is immersed in a special dilator solution which causes it to expand half again its normal size. When thoroughly dry, it shrinks to smaller than its original size to form a tight fit over the handles. The plastic is said to be unaffected by temperature and humidity, and will not split or crack when being applied.

FROM Worcester, Mass., Norton Co. reports that, in grain or powdered form, the product Norbide is the hardest manufactured abrasive known—doing work that previously required the use of diamond dust. In molded form it resists abrasion and can be used where an exceedingly hard surface is desirable. Made of carbon, in form of coke, and boric acid it is formed by tremendous heat. Its hardness is next to the diamond; it is also self-bonding and resistant to corrosion.

ONE of the latest applications of plastics is the use of Lucite acrylic resin in the manufacture of plating barrels of the type employed in plating small pieces by the tumbling method. Plastic barrel now being made by Hardwood Line Co. of Chicago, is formed under heat and pressure into a hexagonal cylinder with seamless edges. The barrel has no obstructing ribs and crevices, and permits free movement of parts during plating and unloading.

Preserving Artiller

Another chapter on combating corrosion, th following discussion detailing low-cost pr cedures used in preparing heavy gun par for long-term storage in welded steel co tainers may offer worthwhile suggestions many metalworking plants

By W. H. WALTER
Assistant Mechanical Engineer
American Bridge Co.
U. S. Steel Corp. Subsidiary
Pittsburgh

VALUE of long-term storage of artillery materiel under conditions requiring the least possible maintenance is two-fold—strategic and economic.

From an economic point of view it was extremely desirable to study methods of preserving latest types of artillery *materiel.* It was essential these methods should be low in cost and involve a minimum of field maintenance; also that transportation and storage area costs should be low and, above all, that the preservation method should be adequate to protect the *materiel* without deterioration over long periods.

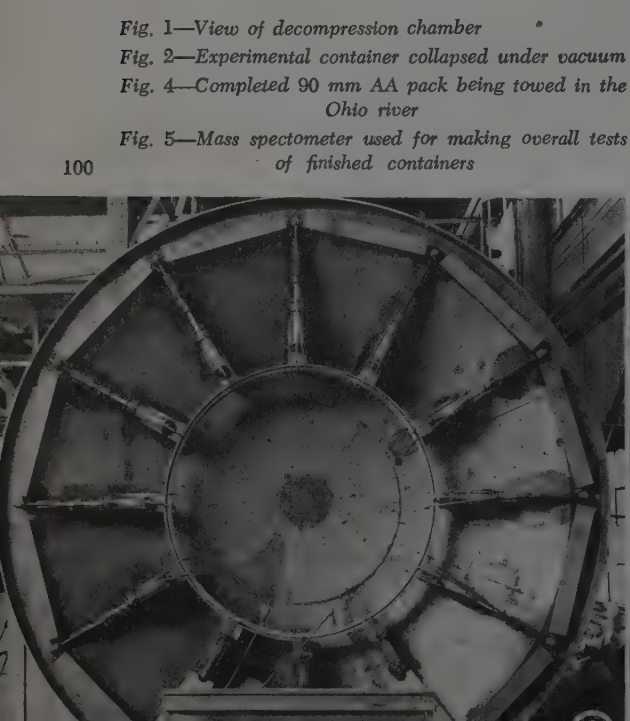
Before cessation of hostilities in Europe, American Bridge Co., subsidiary of United States Steel Corp., at the request of the Army Ordnance Department, conducted experiments on welded steel containers which could store various types of artillery *materiel* in inert atmospheres. Study of the factors which might lead to deterioration by corrosion or oxidation led to the conclusion that the final atmosphere within the containers should contain less than 1 per cent of oxygen and have a relative humidity of not more than 10 per cent at zero degrees Centigrade. It was also predicated that the containers would have to be stored in ambient temperatures ranging from minus 60° to plus 170° F.

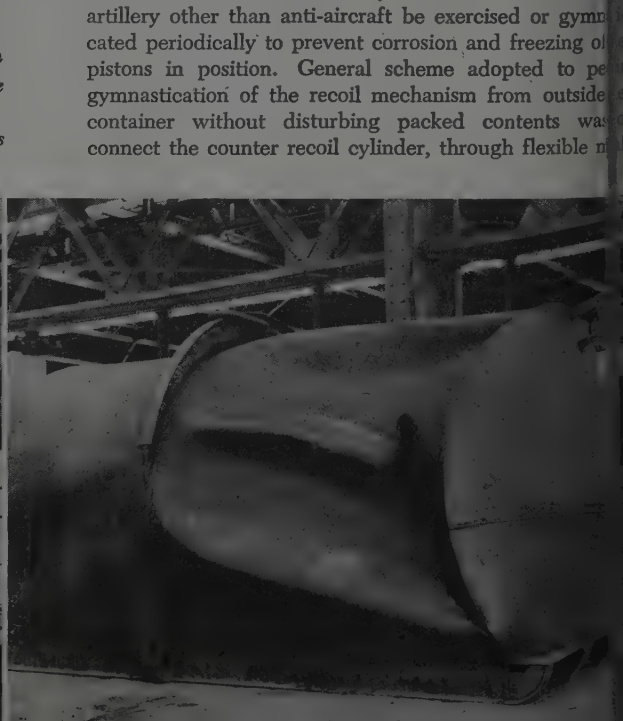
Among the inert gases investigated, dry nitrogen appeared most suitable from the viewpoint of inertness, availability and economy. It also appeared desirable that a positive gas pressure should be maintained under even the lowest temperature conditions. This would minimize damage that might occur due to accidental mishand Inclusion of a dehydrating agent in the final sealed tainer also was considered highly desirable as both equipment and the container itself would release quantities of water vapor which could not be rem economically by preliminary drying.

It was the original desire and intention of the Ordn Department to have all major combinations stored w containers with as little breakdown as possible from traveling position. Experimental containers for hou guns in this condition were designed and constru Following inspection, it was found that too much v space was involved in this type of storage. It was decided to disassemble major combinations and them so waste space within the container would be minimum. Instructions were to disassemble the gun such an extent that reassembly would be brought w the scope of second echelon troops (See Figs. 6, 7).

It was considered necessary that recoil mechanisr artillery other than anti-aircraft be exercised or gymn cated periodically to prevent corrosion and freezing o pistons in position. General scheme adopted to pe gymnastication of the recoil mechanism from outside container without disturbing packed contents was connect the counter recoil cylinder, through flexible n

Fig. 1—View of decompression chamber
Fig. 2—Experimental container collapsed under vacuum
Fig. 4—Completed 90 mm AA pack being towed in the Ohio river
Fig. 5—Mass spectometer used for making overall tests of finished containers





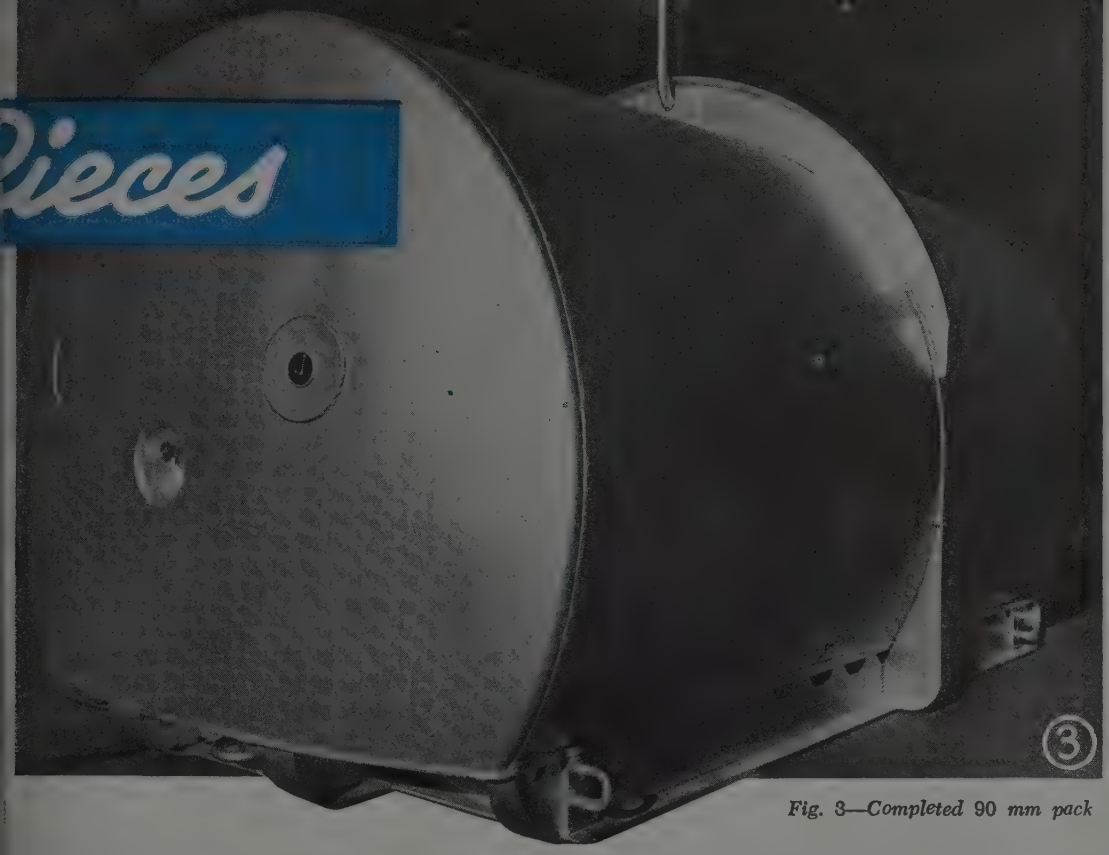


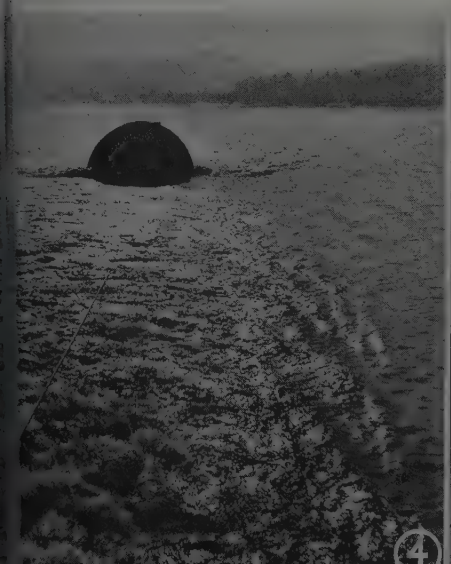
Fig. 3—Completed 90 mm pack

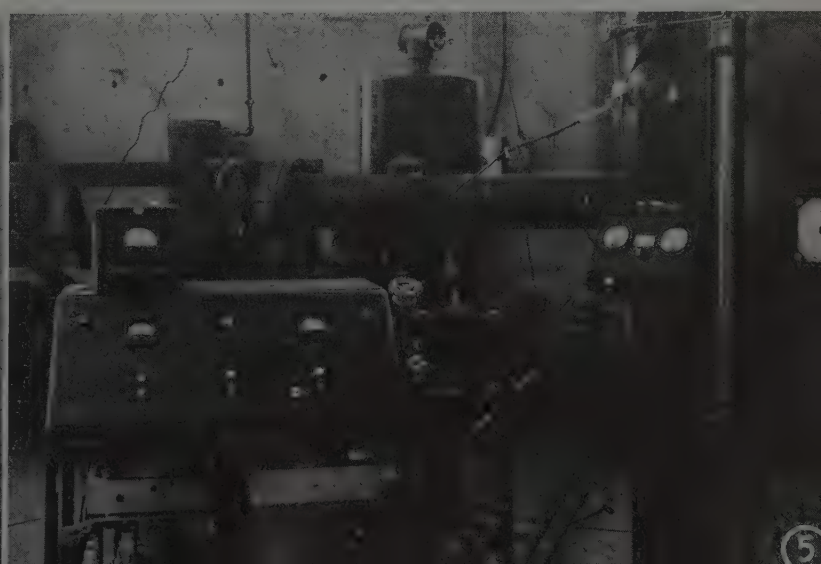
, to the external side of the case by removing the ter recoil cylinder head and substituting a special for the purpose. Through the external connection ecial noncorrosive cylinder oil, supplied by the Army, pumped into the cylinder, simulating a condition of recoil.

rst step in preparing material for packaging was re- l of the vinylite strippable film. Before original ap- tion of the film it was necessary to remove all paint re metal to insure bond of the vinylite at points where ilm comes in contact with the gun. At such points inylite had to be scraped away, the metal power wire- ed and thoroughly cleaned with a vinylite solvent, epainted with a prime and finish coat. Heavy cosmo- protective coatings were removed from all machined surfaces and were replaced with low viscosity rust-inhibitive oils.

All accessible rust spots were cleaned to bare metal and repainted. Where rust conditions were found in places not accessible, except through excessive disassembly, notes of such conditions were included in the engineering report packaged with each container as evidence that such corrosion did not take place during storage. All machined surfaces were washed with ethyl alcohol to remove fingerprint stains. Lenses were washed with the proper solvent and thoroughly dried before storage. Grease spots were removed with solvent and at such points the paint was removed, new prime and finish coats were applied.

Containers originally were designed and constructed





for the 90 mm, AA, MlAl mount, on the basis of having the gun disassembled from traveling position to as small an extent as possible, and of having sufficient strength to withstand maximum gas pressure imposed by the original ground rules. In order to conform to the specification that the container should be under positive pressure when stored at minus 60° F, it was necessary to design for a maximum of 10 psi gage pressure, a condition which would be imposed by storing at a temperature of 170° F.

Containers were designed and built with semi-cylindrical envelope with straight sides and flat ends in both welded and bolted end constructions, with cylindrical envelope and flat ends, with cylindrical and semi-spherical ends, and with a cylindrical envelope having dished ends. Various types were tested to destruction under internal pressure and a study of all results indicated the most economical type of design for all major combinations, except the 75 mm pack howitzer, was the cylindrical envelope with dished ends such as is shown in Fig. 3.

Bases were designed on the theory that it was advisable to allow more than sufficient metal in the skids to permit some loss of metal due to corrosion during storage a long period of time. Half rings for dragging were we at each end of base. On the sides, at each of the corners, half rings were provided for lashing to during transportation by ship. Each container was vided with a lifting ring in a bail located at the c of gravity of the loaded container.

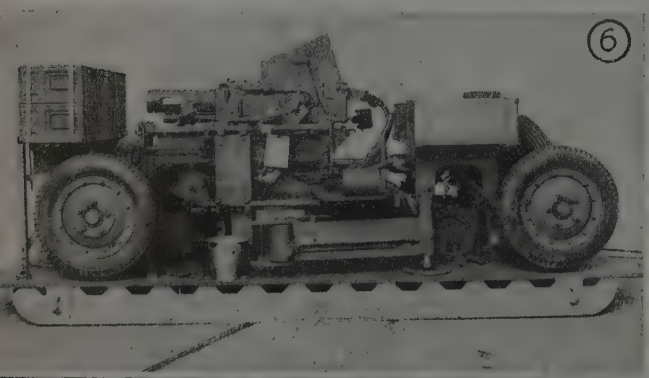
Tests of the cylindrical type container with d ends resulted in failure under internal pressure at 4 The same type container collapsed under 6 in. o absolute pressure. See Fig. 2. The rectangular type tainer used for the 75 mm pack howitzer resisted col when the internal pressure was taken down to 1 in. o

In order to test the ability of the welded steel conta to preserve the pressure under which they were origi placed, two full packed 90 mm MlAl mounts were ped on a flat car from Ambridge, Pa. to the West and returned. The car traveled about 6300 miles six different railroads and, after a six weeks' trip, retu to Ambridge with all original conditions unchanged.

Upon their return one of the containers as shown in 4 was placed in the Ohio river and towed for 5 miles. sequent containers for all five types of material include the pilot production order were placed in the river an floated without any list with the exception of the 75 unit. The most economical container of this design posed the building of stowage compartments for spares canvas on one side. This necessarily resulted in an symmetrical transverse loading of the container.

Two identical containers were each loaded with m of steel simulating a gun. One was insulated on the terior with ¾-in. thick fiber glass. Thermocouples placed on the skin of each container. Two thermocou were suspended in each container within the shell, about 3 in. from the shell plate and one near the cent the container. One thermocouple was placed in the m simulating the gun in each container. Two thermocou were suspended in the outside air, one in the shade one exposed to the sun.

Under these conditions the two containers were pl in identical exposures, and temperature readings v taken from all thermocouples (*Please turn to Page* 1



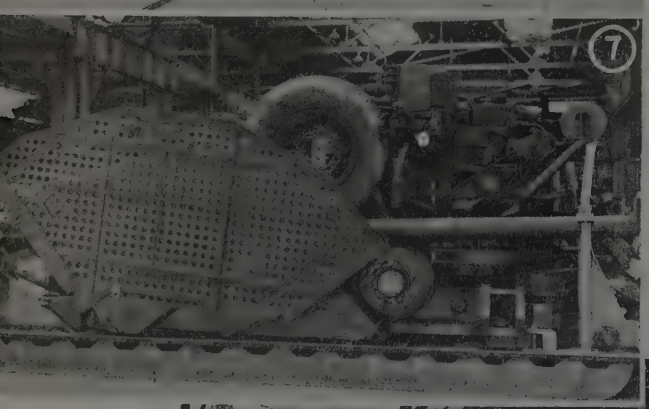


Fig. 6—Palletized 40 mm AA, mount M2A1 shown ready for "packaging"

Fig. 7—Palletized major combination ready for "packaging". (90 mm AA, mount M1A1)

Fig. 8—Completed 90 mm AA packs awaiting shipment

HEAT TREATING Aluminum

In this concluding article of a series of five, additional heat treating cycles and practices are described. Equipment, heating media, temperature controls, etc., also are discussed

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Metallurgist
Reynolds Metals Co.
Louisville

LUMINUM alloys are in a comparay soft state immediately after quenchrom a solution heat-treating tempera- To obtain their maximum strengths, must be aged or precipitation hard-. During this hardening and strengthg operation, precipitation of the le constituents from the supersatursolid solution takes place. As preation progresses, the strength of the rial increases, often by a series of s, until a maximum is reached. Furaging (overaging) causes the strength eadily decline until a somewhat stacondition is obtained.

ecipitation hardening produces a large ase in the strength and hardness of naterial with corresponding decreases ne ductile properties. The process to obtain the desired increase in gth is therefore known as aging or pitation hardening.

engthening of the heat-treatable alby aging is not due merely to the nce of a precipitate. Instead, it is to both the uniform distribution of ely dispersed submicroscopic pre-te and the distortion and other ef- of its formation upon the crystal ure. The aging practices used de- upon many properties other than gth. As a rule, the artifically aged are slightly over-aged to increase resistance to corrosion. This is esly true with the artifically aged high r-bearing alloys that are susceptible to intergranular corrosion when inadequately aged.

Heat-treatable aluminum alloys are subdivided into two classes—those that obtain their full strength at room temperature, and those that require an artificial aging treatment.

Alloys that obtain their full strength after aging 4 or 5 days at room temperature are known as natural aging alloys. Precipitation from the super-saturated solid solution starts soon after quenching, with 90 per cent of the maximum strength generally being obtained in 24 hours. Alloys that require a precipitation thermal treatment to develop their full strength are referred to as artifically aged alloys. However, these alloys also age a limited amount at room temperature, the rate and extent of the strengthening depending upon the alloys.

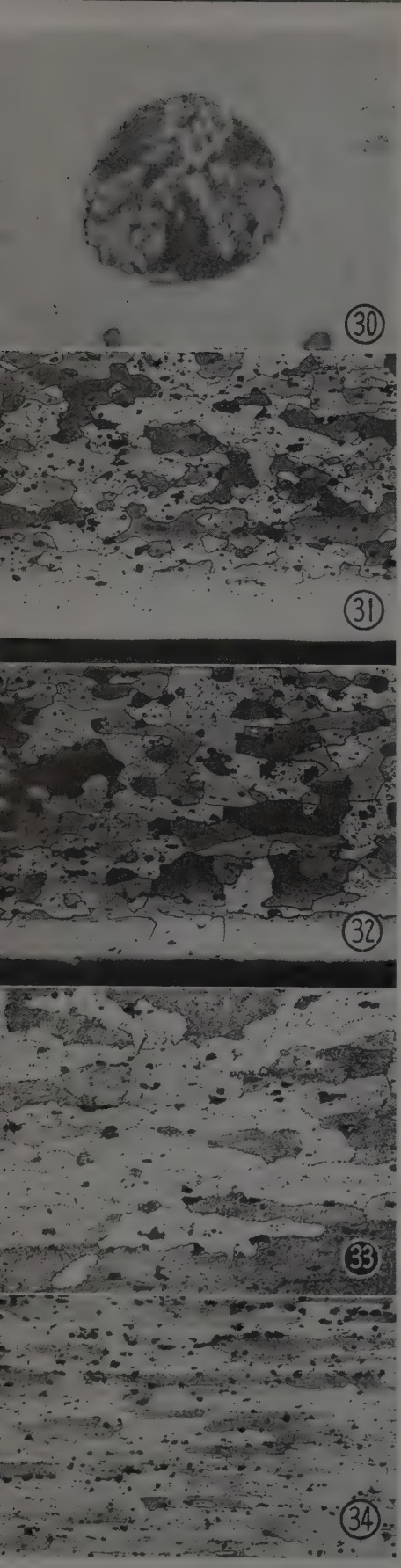
Many of the artificially aged alloys reach their maximum natural or room temperature aging strengths after a few days and can be stocked for fabrication in the "W" temper. Others continue to age appreciably over a long period of time (e.g. some of the high zinc-bearing alloys), their mechanical property changes being insufficient to cause their formability to be constantly reduced. Consequently, they are not stocked in the "W" temper. The advantage of "W" temper

ig. 26—Structure of heat treated aluminum alloy R301. Here insufficient emperature has left some of the soluble constituents, namely $CuAl_2$ (white). out of solution. Keller's etch, X 500

ig. 27—Normal structure of properly heat treated aluminum alloy R301. Use of correct temperature has resulted in virtually complete solution of constituents. Keller's etch, X 500

ig. 28—Structure of incorrectly heat treated aluminum alloy R301. Excessive- high temperature has resulted in melting of certain constituents at grain boundaries. Keller's etch, X 500

ig. 29—Incorrectly heat treated aluminum alloy R301. Here the eutectic has elted in form of "rosettes" (circular spots) and also at the grain boundaries. Caused by excessive temperature. Keller's etch, X 500



formability can be utilized, however, in the same manner as with natural aging alloys, and that is by fabricating shortly after solution heat treatment or by the use of refrigeration. Refrigeration retards the rate of natural aging. At 32° F, the beginning of the aging process is delayed for several hours, while dry ice aging (−0 to −100° F) retards aging for an extended period of time.

The strengths of the natural aging alloys can be increased by subjecting the naturally aged material to a precipitation thermal treatment. Although a considerable decrease in the per cent elongation is obtained, it is not considered detrimental for many applications.

Presence of small amounts of cold work, subsequent to natural aging but prior to artificial aging, has a pronounced effect on the strength of 24S. The increase in strength realized by this method is dependent upon the degree of cold work present.

Artificially aging the natural aging alloys increases the susceptibility of the material to intergranular corrosion. For this reason, the process is generally confined to cladded sheet, extrusions and similar products.

Mechanics: Natural aging alloys 17S and 24S require only exposure at room temperature for several days to develop their full strengths. The other commercial heat-treatable alloys require a controlled precipitation thermal treatment to develop their full strengths.

Degree of strengthening of a properly solution heat-treated alloy by precipitation or aging depends upon both time and temperature. An increase in temperature decreases the time necessary to obtain maximum hardening. Thus, there may be several aging practices applicable to an alloy (note Table II). Use of higher temperatures and shorter times generally produces lower elongations and higher yield strengths whereas the lower temperature procedures give higher elongations with slightly lower yield strengths.

The elapsed time between quenching from solution heat-treating temperature and artificially aging has an effect on the mechanical properties obtaine is, at present, commercially im only with the high zinc-bearing such as R303. This alloy requires cubation period of at least 24 ho room temperature prior to the pre tion thermal treatment to obtai desired mechanical properties.

Precipitation Practices: Temper used for precipitation hardening d upon the alloy and the properties d ranging from 250 to 375° F. They s be controlled within a very narrow (5° F) to obtain best results. See II. Time at temperature, referred the soaking time, is dependent the temperature used, the alloy an properties desired. It ranges from 24 hours. Increasing the aging tem ture decreases the soaking period sary for proper aging. However, a control of both time and temperat necessary when using the higher peratures.

Rate of heating is not critical, bu material should be placed in the fu in such a manner that a large temper differential between various parts o load will not exist for an extended p of time. If this occurs, part of the terial will receive an incorrect treatment.

After receiving the precipitation th al treatment the material should p ably be air cooled to room tempera Water quenching, while not nece produces no deleterious effects. Fu cooling has a tendency to produce aging.

Solution heat treating and arti aging processes are so closely conn that it is difficult to distinguish bet the difficulties that may be assoc with each. It is advisable to c thoroughly the solution heat-treating cedures employed when difficulties in conjunction with the precipitation t ment.

Difficulties which may be encount when artificially aging properly sol heat-treated material are:

Low Tensile and Yield Stren Causes may be (a) insufficient tim

Fig. 30—Large rosette in incorrectly heat treated aluminum alloy R301 indicates eutectic melting caused by excessive temperature. Keller's etch, X 175

Fig. 31—Showing normal amount of diffusion of copper and other soluble constituents into the high purity cladding or covering of Pureclad 24S, resulting from correct heat-treating cycles. Keller's etch, X 500

Fig. 32—Excessive (100 per cent) diffusion of copper and other soluble constituents into the high purity cladding or outer covering of Pureclad 24S. Excessive time at temperature caused this undesirable structure. Keller's etch, X 50

Fig. 33—Structure resulting from poorly quenching solution-heat-treated aluminum alloy 24S. Note lack of grain contrast and precipitation at grain boundaries. Keller's etch, X 500

Fig. 34—This structure reveals the attack produced by heating in an improper furnace atmosphere, usually associated with product of combustion in direct gas-fired furnaces, or excessive water vapor. This (high-temperature oxidation) was produced in 24S-T. Keller's etch X 100

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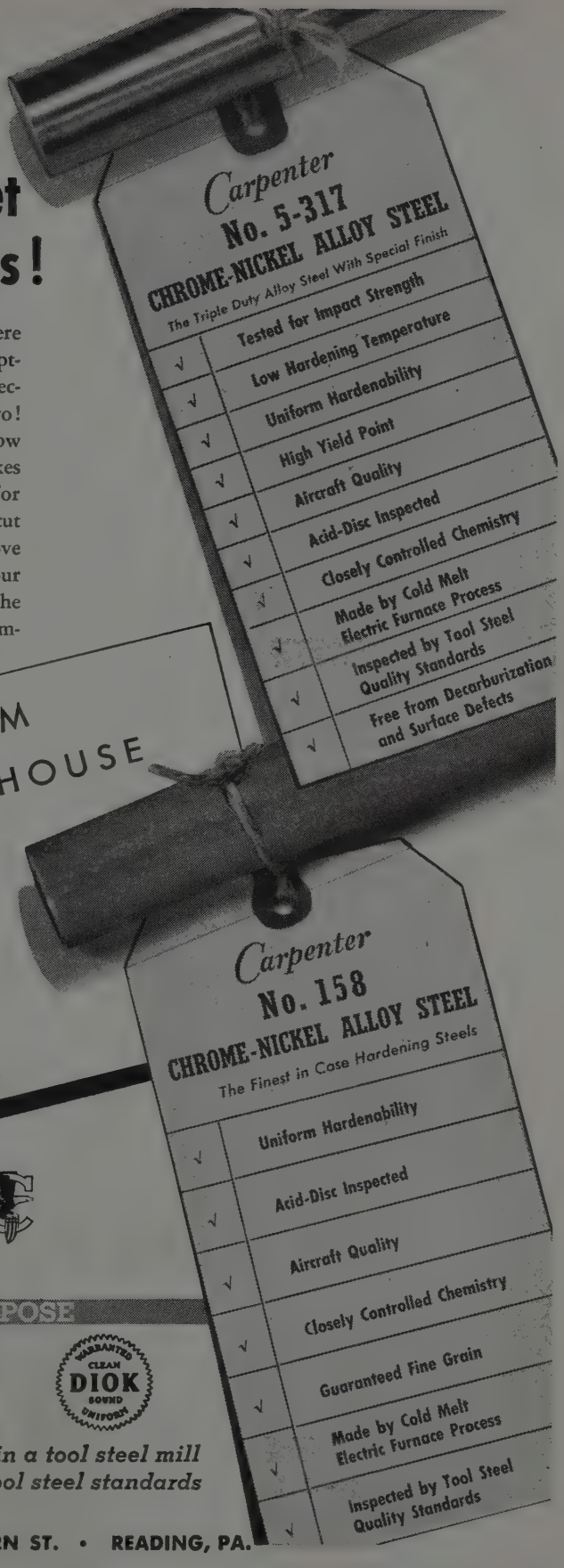
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TABLE II

HEAT TREATING CYCLES

Alloy	Soaking Temperature °F	Solution Heat Treatment: Quench	Temper Designation‡	Precipitation Treatment (Aging): Aging Temperature °F	Aging Time Hours	Temper Designation
2S		Not Heat Treated			Not Heat Treated	
8S		Not Heat Treated			Not Heat Treated	
14S	930-945	Cold Water**	W	360±5	5	T
				350±5	8	
				340±5	10	
				320±5	18	
17S	930-950	Cold Water	None	Room	96-120	T
18S	950-970	Water or Oil	W	340±5	10	T
24S	910-930	Cold Water	None	Room	96-120	T
Pureclad-(Alclad)†						
24S 24S	910-930	Cold Water	None	Room	96-120	T
				340±5	12	
25S	955-975	Water or Oil	W	290±5	18	T
32S	950-970	Water or Oil	W	340±5	12	T
A51S	960-980	Water or Oil	W	350±5	8	T
				320±5	18	
52S		Not Heat Treated			Not Heat Treated	
R301 (Alclad)† 14S	930-950	Cold Water	W	350±5	8	T
				320±5	18	
R303* (75S)†	810-840	Cold Water**	None	315±5	8	T315
				275±5	25	T275
R317	930-950	Cold Water	None	Room	96-120	T
R353 (53S)†	960-980	Cold Water	W	320±5	18	T
				350±5	8	
R361 (61S)†	960-980	Cold Water	W	320±5	18	T
				350±5	8	

* Precipitation treatment should not be started until at least 24 hours after completion of solution heat treatment.

** Hot water for extra heavy forgings.

‡ When in the stable condition.

† Other types similar to those listed, are enclosed in parenthesis.

TABLE III

SOAKING TIME FOR SOLUTION HEAT TREATMENT OF WROUGHT PRODUCTS (EXCEPT FORGINGS)

TIME IN MINUTES

Alloy	Thickness up to 0.032 in.	Thickness 0.032-0.125 in.	Thickness 0.125-0.250 in.	Thickness Over 0.250 in.
14S	..	.	30	60
A17S	20	20	30	60
17S	20	20	30	60
24S	30	30	40	60
Pureclad 24S (Alclad 24S)†	20	30	40	60
R353 (53S)†	20	30	40	60
R361 (61S)†	20	30	40	60
R301 (Alclad 14S)†	20	30	40	60
R303 (75S)†	20	30	40	60
Clad R303	20	30	40	60
R317	20	30	40	60

†Other types, similar to those listed, are enclosed in parenthesis.

TABLE IV

SOAKING TIME FOR SOLUTION HEAT TREATMENT OF FORGINGS

TIME IN HOURS

Alloy	Thickness up to 2 in.	Thickness Over 2 in.
14S	½-6	2-12
17S	½-6	2-12
18S	½-6	2-12
25S	3-6	2-12
32S	½-6	2-12
A51S	½-6	2-12
R353 (53S)†	½-6	2-12
R303 (75S)†	½-6	2-12
R317	½-6	2-12

†Other types, similar to those listed, are enclosed in parenthesis.

temperature during the precipitation thermal treatment, commonly referred to as under-aging; (b) excessive time or temperature during the precipitation thermal treatment, commonly referred to as over-aging.

High Yield Strength and Low Elongation. Cause often is the use of too high an aging temperature, or too long a soaking time.

Low Yield Strength and High Elongation. Cause is usually the use of too low an aging temperature, or too short a soaking time.

Intergranular Corrosion. Cause is usually improper aging. particularly with the high copper-bearing alloys. Slightly over-aging tends to alleviate this difficulty.

Equipment: Temperatures required for the various aging treatments vary from a minimum of 250° F for precipitation thermal treatment to a maximum of 980° F for solution heat treatment. This wide range of temperatures, in conjurction with the close temperature control required and in some cases the fast heating rate necessary to produce fine grained material, makes it desirable to consider the equipment for each of the thermal processes separately. However, it should be kept in mind that equipment for one type of thermal treatment may also be suitable for another.

Heating media used are divided into two groups—liquid baths and gaseous atmospheres. Each has distinct advantages and disadvantages, maki choice dependent upon the app Air furnaces are ideal for preci thermal treatments and for an Furnace designs are simple. C tion, maintenance and operatin are reasonable. Metallurgical co generally easy to maintain at a tory level. Also, these are readily able for solution heat-treating pro particularly where substantial q of relatively large pieces are i Air furnaces are also generally several alloys are to be heat-treat the same equipment since the t ture can be raised or lowered

Initial cost of air furnaces is tially higher than for salt bat operating costs are generally lowe are efficient, clean, flexible. War large thin sections may be grea to the greater relative specific of the metal. Heating rates are and mixed loads of different siz terial are more troublesome. Qu with proper equipment is excelle

Melting points of the salts usec baths are generally so high th can be advantageously used o solution heat treatment. Salt ba ideal for solution heat treatin parts, large thin sections and mixe Initial costs are low, but operati are generally substantially great to drag out of the salts.

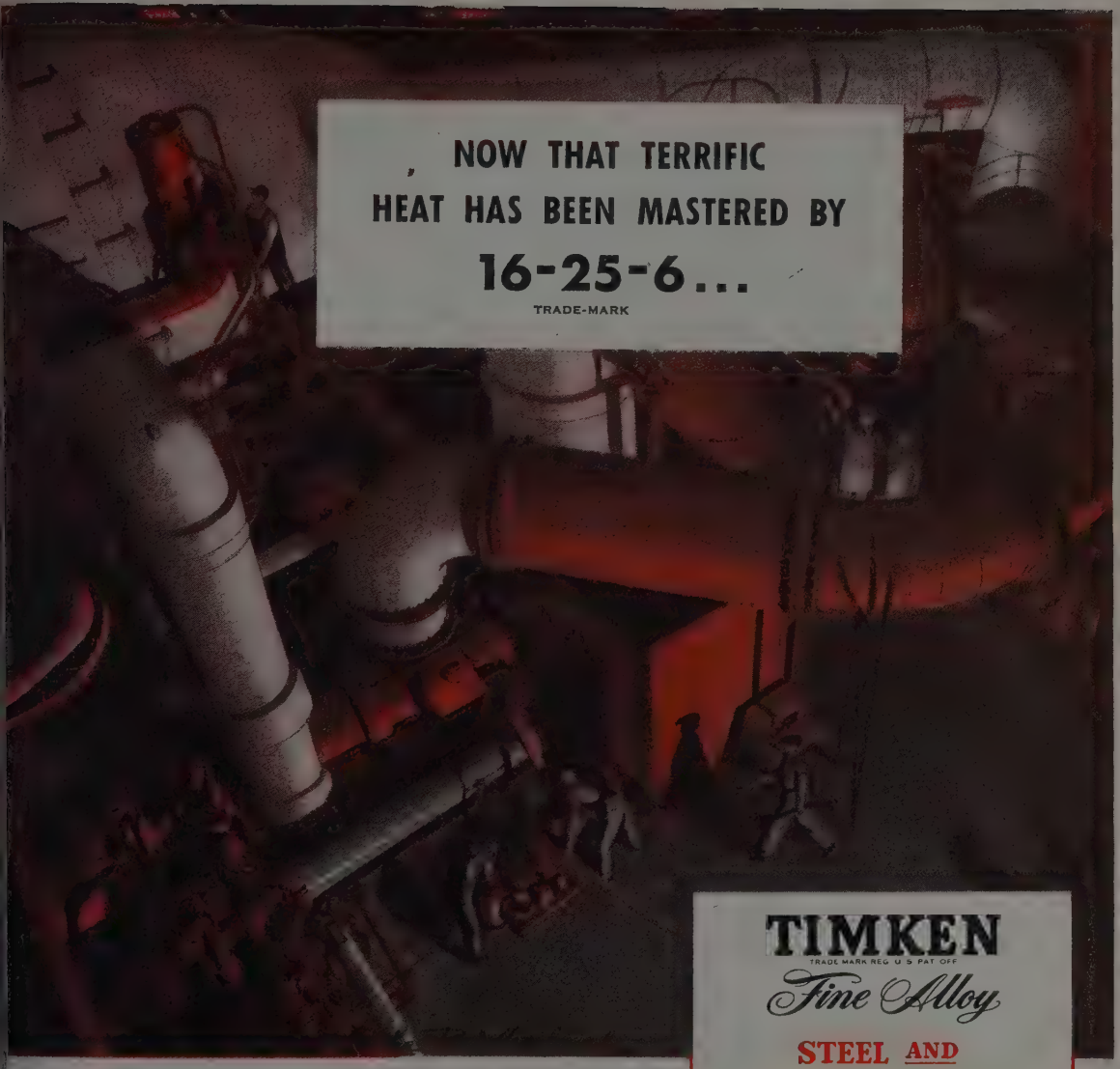
Heating rates are very fast bath temperature is usually ve form. These advantages, howev be completely overshadowed by t er quench caused by the arra of the equipment and the salts a to the material. Salt baths must erated with caution to prevent ex as any water on the work is transformed to steam on immersio

Air Furnaces: Most desirable naces for solution heat treating nealing are the recirculating ai Heated air is recirculated at rat velocities to obtain a rapid heat and a uniform temperature. The of combustion are excluded fr furnace atmosphere.

Furnaces designed so that th ucts of combustion form part o the furnace atmosphere can be precipitation thermal treatmen many annealing processes, and solution heat treatments. Howe presence of sulphur compounds a ture is detrimental to aluminun ing blistering and high temperat dation. The use of such furnaces i recommended only for precipitati mal treatments.

Heat source may be oil, gas, tricity, with electricity being p for most operations due to the

(*Please turn to Page 148*)



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ractical gas turbines may be here soon!

ne famous Timken Stainless which made possible the turbo-harger and the jet propulsion now opened the way to an revolutionary prime mover? f the Navy's 3500 horsepower nental gas turbine built by halmers indicate that success e near at hand. By using in the turbine rotor and the high temperature opera-cessary to efficiency has been d. Already satisfactory test ave been made at 1350°F.,; operating temperature ever in a stationary unit of this emperatures on forthcoming ill reach 1500°F.

ers now are confident that gas s can be designed to weigh less, occupy less space and maintain a higher efficiency than the steam turbine. As a prime mover for ships, land power stations and locomotives the advantages of the gas turbine are great and many.

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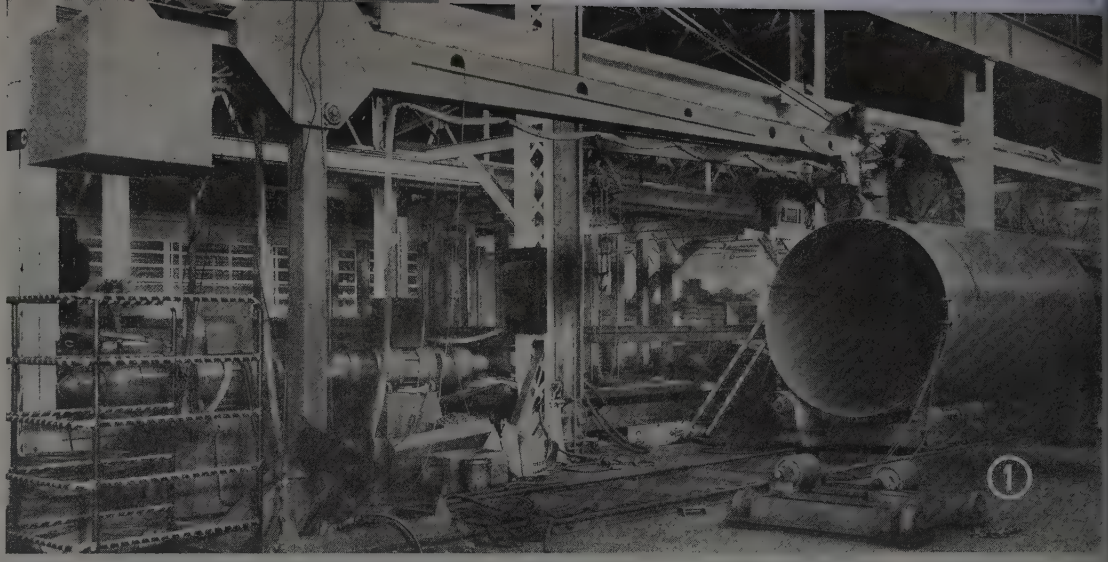
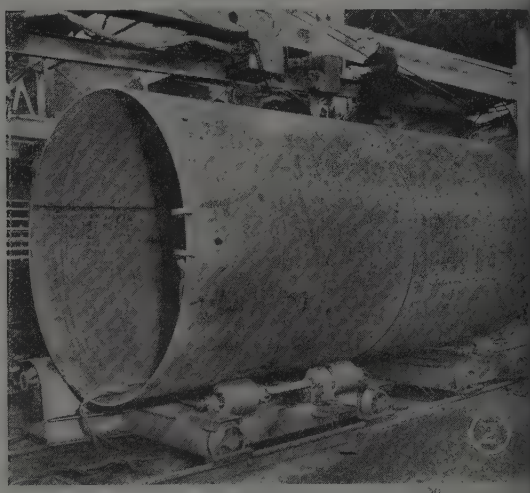


Automatic WELDING PROCESS

. . . . reduces boiler and tank fabrication costs by as much as 25 per cent

By R. H. NEWTON
Welding Engineer
Lincoln Electric Co.
Minneapolis



SAVINGS in boiler and tank fabrication costs up to 25 per cent over manual method of construction were effected at the Wm. Bros Boiler & Mfg. Co., Minneapolis, by installing the Lincolnweld process of automatic metallic arc welding recently developed by Lincoln Electric Co., Cleveland.

One of two such installations at the Wm. Bros company is shown in Fig. 1. It consists of the automatic welding head, control box, wire reel and flux pick-up and hopper, mounted on a boom. Shown under construction is a 200-lb pressure butane tank, 72 in. in diameter and ultimately 60 ft long.

The boom on which the automatic welding head is mounted can be adjusted up or down on the vertical column to accommodate various size jobs. Ordinarily, the work is scheduled so that all units of one size comprising a given order may be handled with maximum efficiency. Thus, all sectional parts are shaped on a bending roll, then hand tack welded and automatically finish-welded in successive operations.

One of the most interesting aspects of the automatic arc welding at this plant is the way in which the various structures are positioned and moved for welding. In this case the set-up consists of an ingenious arrangement of cars or dollies mounted on steel tracks which permit the work to be moved on a horizontal plane, or rotated at a given speed, depending on job requirements.

This entire work-handling equipment, shown in Fig. 2 was designed and built under the supervision of T. J. Warmington, former works manager now in charge of boiler sales at Wm. Bros company. Cars and rollers are powered by electric motor having a 4-speed transmission and variable speed reducer permitting a travel or rotating speed ranging from 6 to 120 ipm.

In "Lincolnwelding" the butane tank

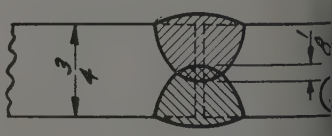


Fig. 1—Overall view of Lincoln weld installation used for weldin butane tank measuring 60 ft lon and 72 in. diameter

Fig. 2—Close-up of position ca and rollers used to move tank i welding both longitudinal an girth seams

Fig. 3—Cross-sectional sketch c longitudinal and girth seams

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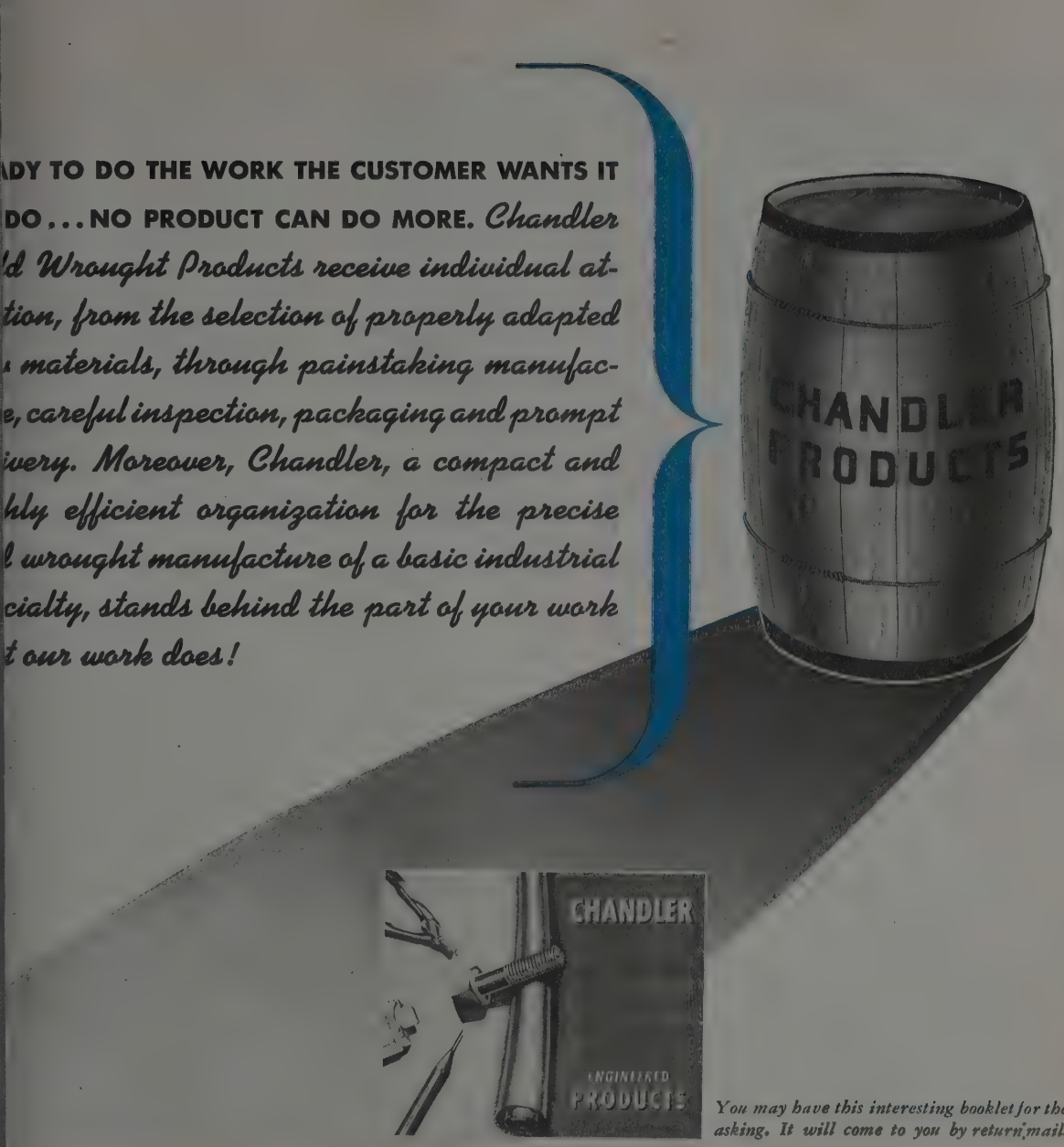

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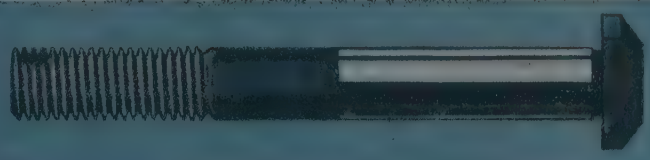

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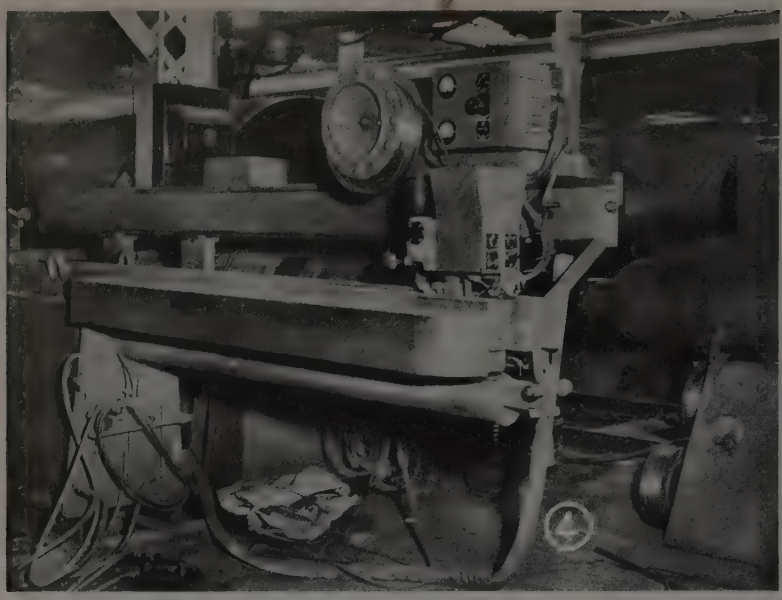

Fig. 4 — Smaller Lincolnweld mounted on beam t Wm. Bro company for welding of small types of structures

as illustrated in Figs. 1 and 2, each of the four sections measuring 6 ft in diameter by 15 ft in length are aligned on the fixture and first tack welded manually. Only one pass of the automatic welding arc is required on each side of the seams in this case, the wall thickness being 3/4-in. On vessels ranging greater than 3/4-in. wall thickness, two passes are applied to the outside of the joints.

Details of the welded joint as applied in the fabrication of the butane tank under discussion are shown in the sketch, Fig. 3. In this case the joint is the flush butt type, with no appreciable gap. Weld penetration on each side is sufficient to overlap the welds approximately 1/8-in. as indicated in the sk On material over 3/4-in. in thickness joint is veed at the seam to e full penetration of the weld metal.

Note that the longitudinal seam each section is staggered with the responding seam in the adjacent se to avoid possible concentration of stress areas.

The completed structure consi of four 15 ft section and heads we into one integral unit as constructed this process of automatic met shielded arc welding passes the U boiler code requirements set up by ASME.

A second "Lincolnweld" installat shown in Fig. 4, designed for the w ing of smaller types of structures, mits the company to handle a large va of fabricating jobs. In addition to construction of large size tanks such described in this article, they are equipped to produce smaller types structures such as smoke stack secti commercial boilers, duct work and he sheet metal assemblies ranging in th ness from 14 gage to 1/4-in.

Latest American Standards Listed in New Catalog

Revised list of standards approved and published by the American Standards Association includes definitions of technical terms, specifications for metals and other materials, dimensions, safety provisions for the use of machinery, methods of work and tests for the finished product.

Standards throughout industry are said to represent agreement on the part of maker, seller and user in mechanical, industrial, transportation, building, textile and other fields. Some 154 American war standards are being reconsidered for their possible value in peacetime production.

Available free from the association, 70 East 45th street, New York, catalog is valuable reference material for engineers, manufacturers and sales organizations.

Illustrated Micro Switch Catalog Offered

A new publication describing the complete line and illustrating many varied uses of the product, is available from Micro Switch division of First Industrial Corp., Freeport, Ill. Said to be an excellent handbook for design and production engneers, it lists the many types of switch housings along with the varied types of actuators.

Designated as catalog No. 61, its eight sections cover switches for use with different kinds of machines and devices under all conditions in aircraft, automotive, marine and railway equipment.

Book Shows Variety of Hydraulic Press Uses

A new book containing helpful information on how the Denison Multipress, a bench-size hydraulic machine tool, can be used for a great variety of operations is being distributed by Denison Engineering Co., Columbus, O.

Included in the 13-section publication are sections on various operations the machine is capable of performing, such as assembling, trimming, pelleting, coining, blanking, straightening, etc. and different types of materials—ceramics, precious metals, plastics and fibrous products—with which it will work.

Specification Book on Waterproofing Offered

A new specification book of waterproofings, damp-proofings and concrete specialities is offered by Truscon Laboratories Inc., Caniff and Grand Tru Railroad, Detroit. Containing both co plete and short specifications, illustrati and description of company's produ it is divided into three sections: Wa proofings, including integral and i waterproofing; damp-proofings, incl ing clear and bituminous damp-pro ing; and a miscellaneous section, desc ing a transparent membrane method curing concrete, pool coatings etc.

Aluminum Industry Reviewe

The Aluminum Industry, by Stan V. Malcuit; paper, 36 pages, 6 x 9 inch published by Bellman Publishing Inc., 83 Newbury St., Boston 8, for

This monograph is No. 4 of the Ame can Industries series and is by the he of the public relations department the Aluminum Co. of America, Pittsbur The series is planned to cover 75 ba American industries.

The text covers a definition of alu num, history of the industry, mini production of alumina, reduction of a minum, semifabrication of aluminu manufacture of finished products a marketing.

A feature is a list of occupations the aluminum industry, which assi in finding information about the seve jobs that make up the industry.

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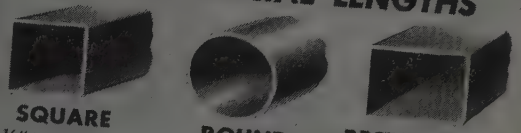

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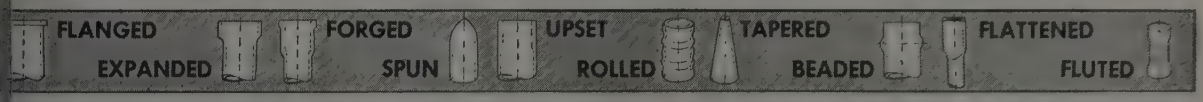

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VIBRATION-PROOF *fastening*

CANTILEVER type spring assembly and a stud comprise the war-designed locking fastener manufactured by Lion Fastener Inc., Honeoye, N. Y. Capable of being applied to removable plywood, metal or plastic strips, channels, housings or panels, it is a preassembled unit which has exceptional tensile strength and shearing resistance.

The spring assembly is composed of spring and base, the base forming a supporting member for the spring under extreme loads. Retaining lugs at each end of the base hold the spring, which is of floating leaf construction. Spring is formed with a double set of grooves and cams which interlock with the notched shoulders of the stud, shown in Fig. 1.

Locking of the fastener is a simple procedure; the pieces with stud and spring assembly installed are brought together and the stud inserted in the spring assembly. A quarter turn of the stud head, which may be of round, flush or wing type, locks the two pieces together, as shown in Fig. 2. Forged shoulders of the stud are rigidly held by the double set of grooves and cams and by constant tensional resistan the spring.

The base will support the cente tion of the spring under excessively tension or shear loads, limiting defl and preventing loss of spring te Separation distance between outer and structure also is limited. The automatically corrects misalignment ing fastening.

Advantages claimed for this fas device are that it has no threa strip, no loose parts and that instal time is short as there are only two to be spot welded or riveted in Locking and unlocking can be done one side only and tests have proved to be labor saving.

Laboratory tests conducted by craft manufacturers and testing la tories have found these fasteners to physical properties in excess of Arm Navy aircraft specifications. The Lion fastener has a tensile streng 1425 lb and a shearing resistan 1950 lb. Sheet separation when i subjected to a load of 500 lb was to be 0.040-in.

Vibration tests of 3600 cycles at in. amplitude with a 175 lb load f hours failed to loosen the lock also was opened and closed 40,000 at 100 times per minute without si appreciable wear. The initial te of the cantilever spring is from 65 lb.

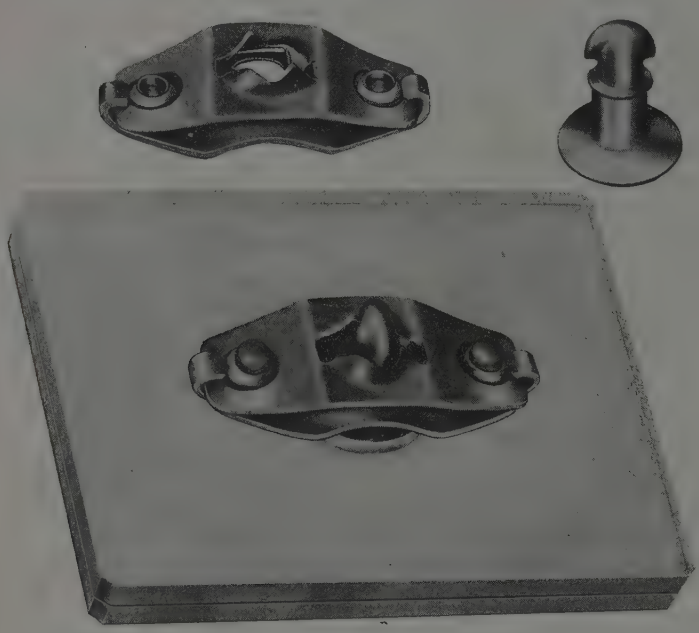


Fig. 1 (top)—Two parts of Lion locking fastener, spring assembly and stud. Cantilever type spring is held in place by lugs on base

Fig. 2 (bottom)—Locked fastener. Stud is inserted in spring assembly in position shown in Fig. 1 and given one-quarter turn to lock. Grooves and cams of spring assembly interlock with notched shoulders of stud

Flow Rates Measured By Electronic Device

Designed for use with a Rotameter, a new Rota-tronic transmitting instrument developed by Fischer & Porter Co., Hatboro, Pa., records and controls miniature flow rates encountered in laboratory or pilot plant operations. Device is said to indicate and record drop by drop flows as small as 5 milliliters of liquid and 20 milliliters of gas per minute at 70° F.

Utilizing an impedance bridge for transmitting flow readings the instrument detects Rotameter float position and amplifies minute electric current to produce sufficient power at recorder pen. Indicator pointer or pen arm can traverse entire scale from zero to maximum flow in 3 sec, it is said. Cost and space requirements are reduced by absence of any slide wire arrangement.

Steam Cleaning with Alkaline-Type Detergent

New heavy-duty alkaline type detergent for use in steam guns and coil-type steam generating mechanisms was placed on the market recently by Oakite Products Inc., 34 East Thames street, New York. Designed for steam cleaning action at low concentrations the new pro known as composition No. 92, is sa prevent scale clogs in steam coils, solve readily in hot water, and free surfaces. According to the manufac compound is extremely effective on l mineral greases and asphaltic soils f on highway, oil field and refinery e ment, and when overhauling motor

While concentrations of the white powdered material may be us 8 oz per gallon or higher, ordinary on light to heavy-duty cleaning rec only ⅛ to 2 oz per gallon. For stri certain types of paint, 3 to 4 oz pe lon is sufficient.

Economical Method of

Flame-Cutting Cast Iron

Fig. 1—Flame cutting large cast iron wheel with oxyacetylene torch

Fig. 2—Close-up showing slag and molten metal which flowed from kerf during cutting

Fig. 3—Diagram of path to be followed with cutting tip for best results. This is moved in an arcurate semicircular path, constantly moving downward

Fig. 4—Drawing at left shows position of cutting tip to start cut. As cut is started, position is gradually changed until angle of 75° is reached, cut on under side of plate preceding tip on top

ECONOMICAL, successful cutting of ast iron is now possible with improvement in equipment and techniques recently announced. Heretofore, excess arbon and impurities contained in cast on made oxyacetylene cutting of this aterial almost impossible as operation as too slow and costly to be of any ommercial value, even with established ethods and apparatus.

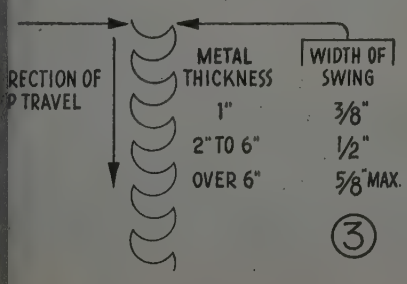
As conceived by engineers of National ylinder Gas Co., several cardinal rinciples are to be considered before ame cutting cast iron: Equipment ust be capable of carrying required olume of gases; suitable oxygen and cetylene pressure has to be maintained; horough preheat conditions must be kept; perator should wear suitable clothing furnish adequate protection from heat nd slag; and operator has to know ost advantageous cutting positions for arious types of cutting problems.

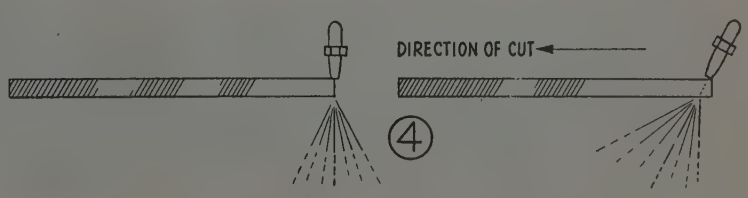
Cutting of cast iron requires cutting p of same size used for cutting mild steel of equal thickness. Oxygen pressure also should be the same as used in cutting mild steel of same thickness. Variations with different types of equipment make determination of exact acetylene pressure difficult, but most satisfactory pressure is determined by maximum preheat flame that will remain on tip after a neutral flame has been established. Acetylene pressure, never to exceed 15 psi on gage of acetylene regulator, must be maintained during actual cutting time.

Single cylinders should never be used on extremely heavy sections as single cylinders do not produce a sufficient volume of gas necessitating a new source of supply such as a piped installation or several cylinders manifolded together. Degree of preheating depends upon grade of casting—softer casting requires less preheat, harder grades, certain alloys and castings exposed to service in heat require a higher degree of preheat. Most satisfactory preheating is by torch, acetylene being preferred as success of cut depends upon ability to maintain a constant maximum preheat temperature.

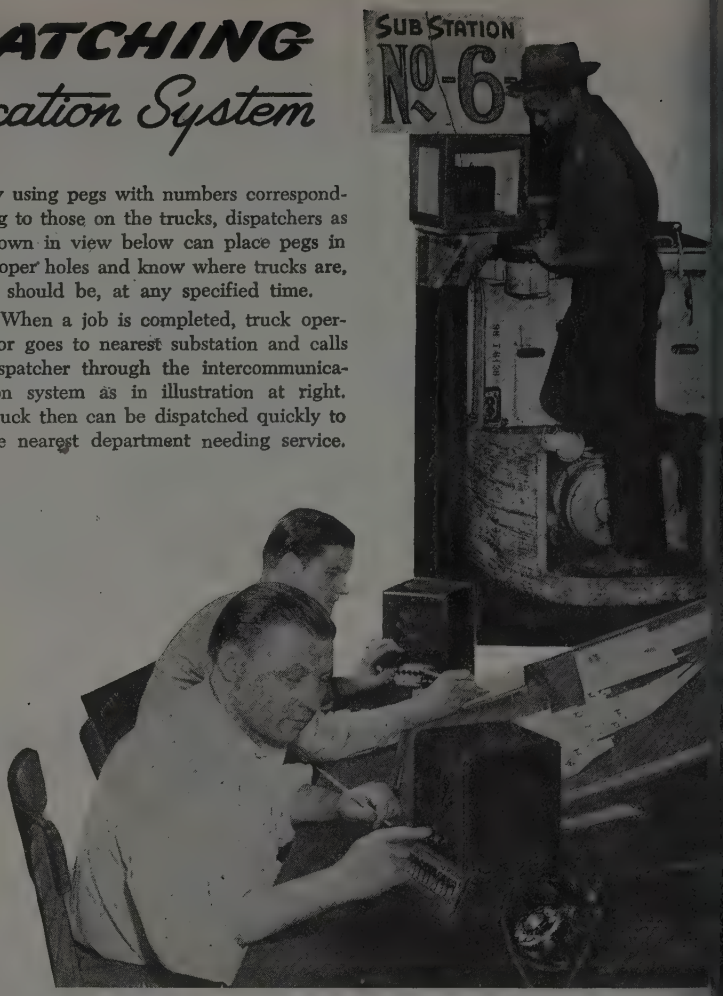
Heat-resistant gloves, form-fitting goggles, and other standard protective devices are worn by operator at all times as he is subjected to intense heat and molten slag. As a word of caution, welding spectacles are not satisfactory and should not be used in cutting cast iron.

Actual cutting operation is guided by thickness and shape of casting to be cut. Thick castings should be preheated to a bright red glow in a strip 1 in. wide across narrowest dimension or top of casting and for about 4 in. across other dimension, resulting area not being





TRUCK DISPATCHING by Intercommunication System



AT the two-section, several acre plant of Spicer Mfg. Co., Toledo, O., an intercommunication system is solving the intra-plant transportation problem. System consists of strategically located substations connected by means of equipment furnished by Executone Inc., 415 Lexington avenue, New York, to central dispatch office.

A large manufacturer of universal joints, transmissions, clutches and other automobile parts, Spicer uses many power-driven trucks to convey material from one part of the plant to another. Blind dispatching made it impossible for dispatchers to know where trucks were at all times. Some departments were waiting for material while others were glutted with finished products to be removed. Quick communication between operators of roving trucks and dispatch office located at some central point was imperative.

This is now accomplished by an internal trucking department composed of two separate control systems, one for each section of the plant. Two control stations are in contact with 17 substations, eight in one section of the plant, and nine in the other. A large wooden control chart or map of the plant, with holes to represent substations in various departments, is located in the dispatch office. By using pegs with numbers corresponding to those on the trucks, dispatchers as shown in view below can place pegs in proper holes and know where trucks are, or should be, at any specified time.

When a job is completed, truck operator goes to nearest substation and calls dispatcher through the intercommunication system as in illustration at right. Truck then can be dispatched quickly to the nearest department needing service.

---

too great to allow cooling before cutting. Cutting begins in a downward direction with tip moving in a semicircular path in preheated area, dropping a little with each stroke, as shown in Fig. 3.

Cutting can be done in any position but it has been found best to start at top of casting with tip in horizontal position to allow burned slag and much of heat to dissipate to side of casting away from operator and prevent accumulation of molten slag in kerf. This procedure also gives cutter better view of opposite end of kerf.

Retaining sufficient heat for continuous cutting of cast iron sections less than 2 in. thick is difficult, making necessary a method of operation somewhat different from that used with heavier castings. Technique varies with shape, width and thickness.

Plates under 1 in. thick are cut through widest dimension from narrowest edge, cutting through wide dimension only when plate is extremely wide and has been cut from both edges. This method is satisfactory as slag disposition is not such a problem as on large thick castings.

Castings between 1 and 2 in. thick are preheated for 6 in. or more, cutting starting in a vertical position and slowly changed to a 75 degree angle, with forward part of cut on underside of plate, as shown in Fig. 4.

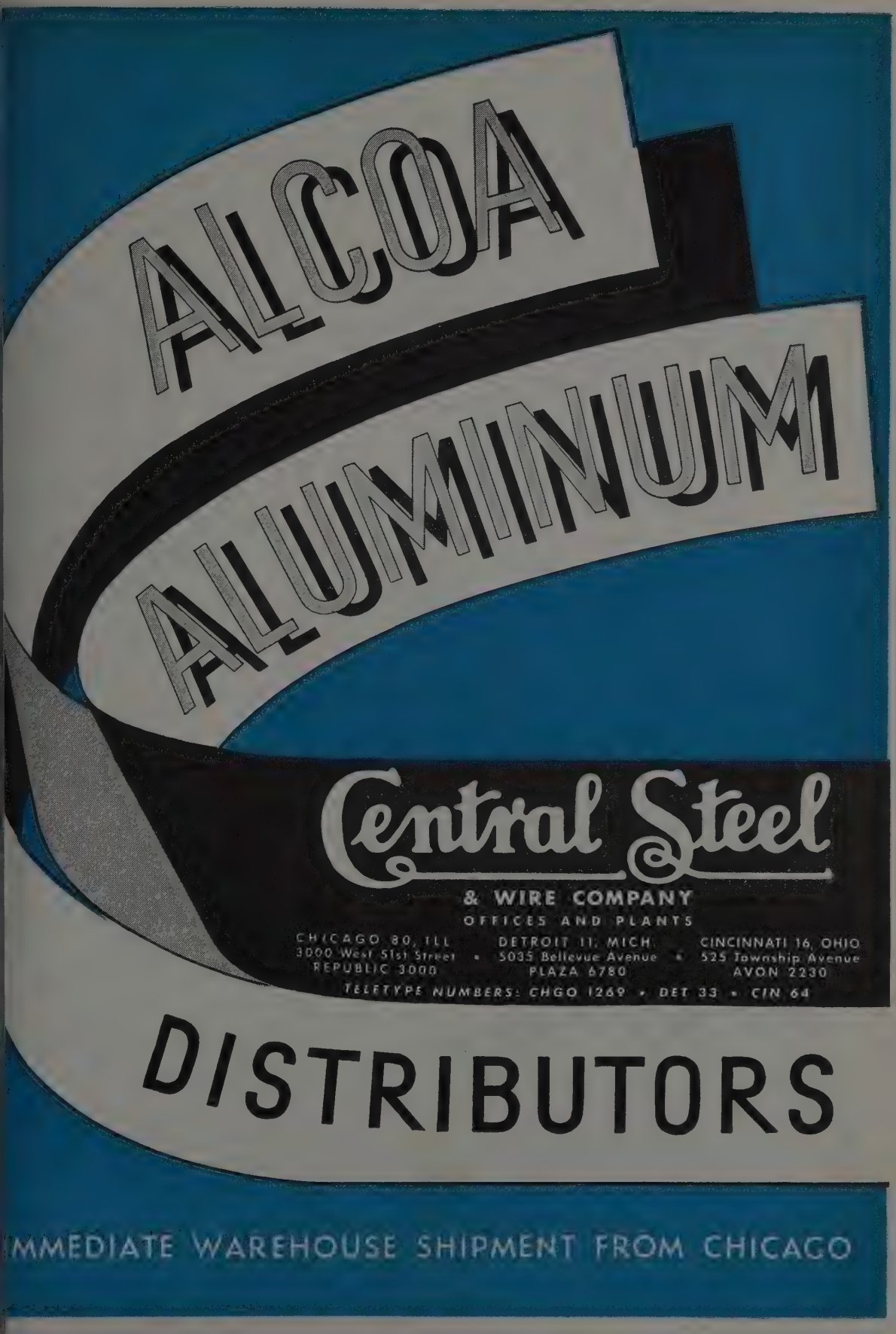
Hollow cast iron shafts are best cut by starting at bottom after preheating and working in an upward direction until hollow is reached. This procedure protects operator from intense heat and molten slag which has a tendency to lodge in hollow. In cases where location prevents starting at bottom, starting on side is next best. Cutting should be to the hollow, or center, not at an angle.

Cast iron pipes, although similar to shafts, have a relatively thin wall and therefore require a different procedure. As there is no slag disposition problem, cut is started at surface after a strip along line to be cut has been heated to a bright red color. Tip should be held to cut a 75 degree angle as was done on plates of 1 in. thickness.

When preparing heavy cast sections for welding, especially when bronze is to be used, break is usually satisfac "veed" out by chipping, but when ping equipment is not available, the acetylene cutting torch may be but requires cleansing by sand bl or grinding before welding.

It is also possible to cut holes slots in castings, although it is an o tion requiring great care to pr shrinkage fractures. Success or f depends upon location of hole or Entire castings should be preheate full expansion before cutting and cooled slowly and uniformly.

It is pointed out by National Cyl Gas Co. engineers that demolition is often more economical in prep castings for cupola charging sizes is oxyacetylene cutting. Demolition sists of dropping a heavy steel supported by a crane over cas This method is not always availab castings are not always located demolition equipment. However, cutting can be used with demolition for cutting castings into smaller for removal to a point when crane drop-ball method is available.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Machining Crankshafts

(*Concluded from Page* 94)

must be made to specifications that permit machining qualities and still have proper hardness conformities. The steel used for the crankshafts is carbon 1042, which has a required rockwell hardness of 60 to 62 C scale reading. Prior to standardizing on the above steel, exhaustive experiments were made on others, particularly carbon 1045.

First of the nineteen operations is stress relieving the forged crankshafts at a temperature of 900° F, as seen in Fig. 1. The second operation is done on a 6-spindle semiautomatic chucking machine. On it are turned the main bearing and rotor journal. It also faces thrust shoulders and one end, center drills one end, undercuts for grinding and drills a 1 in. hole for tapping. Bearing plates and pistons also are machined on this equipment, the former shown during processing in Fig. 2.

The next operation consists of box turning the bearing, facing shoulder and end, undercutting for grinding and centerdrilling. This is done on a hand screw machine. Operation No. 4 machines the locating lug for subsequent turning and grinding operations of pin bearings.

A specially built LeBlonde lathe, shown in Fig. 3, machines the pin bearings of the crankshaft. The part is located on the main bearings and clamped tightly against the previously machined locating lug with tools contacting the work both front and rear at the same time to prevent distortion of the shaft. After one pin bearing is machined the fixture is indexed 180 degrees and the same process is followed in machining the second pin bearing. This operation gives definite assurance that the pin bearings are machined 180 degrees apart.

Sixth in the order of operations is the drilling of the oil passage hole to a depth of 6 15/32 in., four shafts at a time on a special deep hole drilling machine, shown in Fig. 4. The machine is so constructed and electrically timed that the drills automatically clear themselves before chip loading can cause drill breakage. The depth of this drilling before clearance varies with the total depth of the hole.

Small holes are drilled from the periphery of the shaft at all bearing surfaces into the center passage oil hole to permit the oil pump to force oil into all bearings in operation. Operation No. 8 machines the double oil groove on both main bearings, while No. 9 taps a 5/16-in.—18 hole for clamping the motor rotor on the shaft. All machined surfaces are burred, chamfered. All sharp edges removed to prevent cracking in the hardening operation. The shaft is thoroughly cleaned in the tenth operation.

Induction Hardening Process

In operation No. 11, all bearings on the shaft are hardened by the induction hardening process on Tocco equipment manufactured by Ohio Crankshaft Co., and shown in Fig. 5. Equipment consists of induction hardening equipment with three hardening stations. Bearing to be hardened is suspended in a copper induction block by placing the shaft between centers. The high cycle current is applied by the operator pressing a button, and the shaft is brought up to the proper temperature. Allowed to stand from 1 to 2 sec, the time depending on the material, bearing size, etc., it is then sprayed with water at a given pressure and removed from the fixture. Hardness obtained is 60 to 62 measured on a rockwell C scale, as stated previously.

In the twelfth operation the shafts are placed in an electrically controlled hot air furnace for a period of 1½ hours to relieve heat treat strains and prevent cracking. Operation No. 13 consists of lapping of centers with a diamond impregnated carboloy tool to prepare them for accurate grinding operations to follow.

In the next operation the motor rotor journal is ground to a 0.0005-in. limit. Main bearings are held to the same tolerance on an intermediate fi ation. The thrust face is also this operation.

The pin bearings are grou special pin bearing grinder, b of which are driven by a syn set of chain drives. In the operation, the operator places in a special index fixture locati main bearings and against the machined locating lug. After one pin bearing the fixture is dexed 180 degrees and the bearing is ground without rem shaft from the fixture. This i make certain the throws wil degrees apart. Bearings are h maximum tolerance of 0.0005-i diameter. The eccentricity of e bearing dimension is held to a of plus or minus 0.001-in.

In operation No. 16, the main are finish ground to a tolerance c in. on the diameter and must within a maximum tolerance of Air gages are used in the insp the outside and inside diamet circular forms, as seen in Fig. next operation, No. 17, removes edges left by grinding to preven ing of mating parts in the assem ation.

All bearing surfaces are lapp taneously on a specially built c lapping machine, and all bearing are finished to a maximum of inches in the eighteenth operatio

Last operation consists of th cleaning the shaft and deliveri skilled bench inspector who c dimensions 100 per cent with gaging equipment, as seen in F

Special handling equipment is for handling crankshafts throug machining operations to prevent to finished surfaces. Many ho spent by the supervision of t pressor department of Servel in operators for this intricate machi perfecting tools, jigs and fix provide the final finished produ desired quantity and quality.

SHIPPING HUGE SHO

New heavy duty 3½-4-c diesel machine designe Marion Power Shovel Marion, O., for service in ing, quarrying, stripping general construction, is s here ready for rail ship Designated type 111-M, all-welded machine is convertible to dragline or sh.ll service, and as ca seen, requires no major mantling for shipping by

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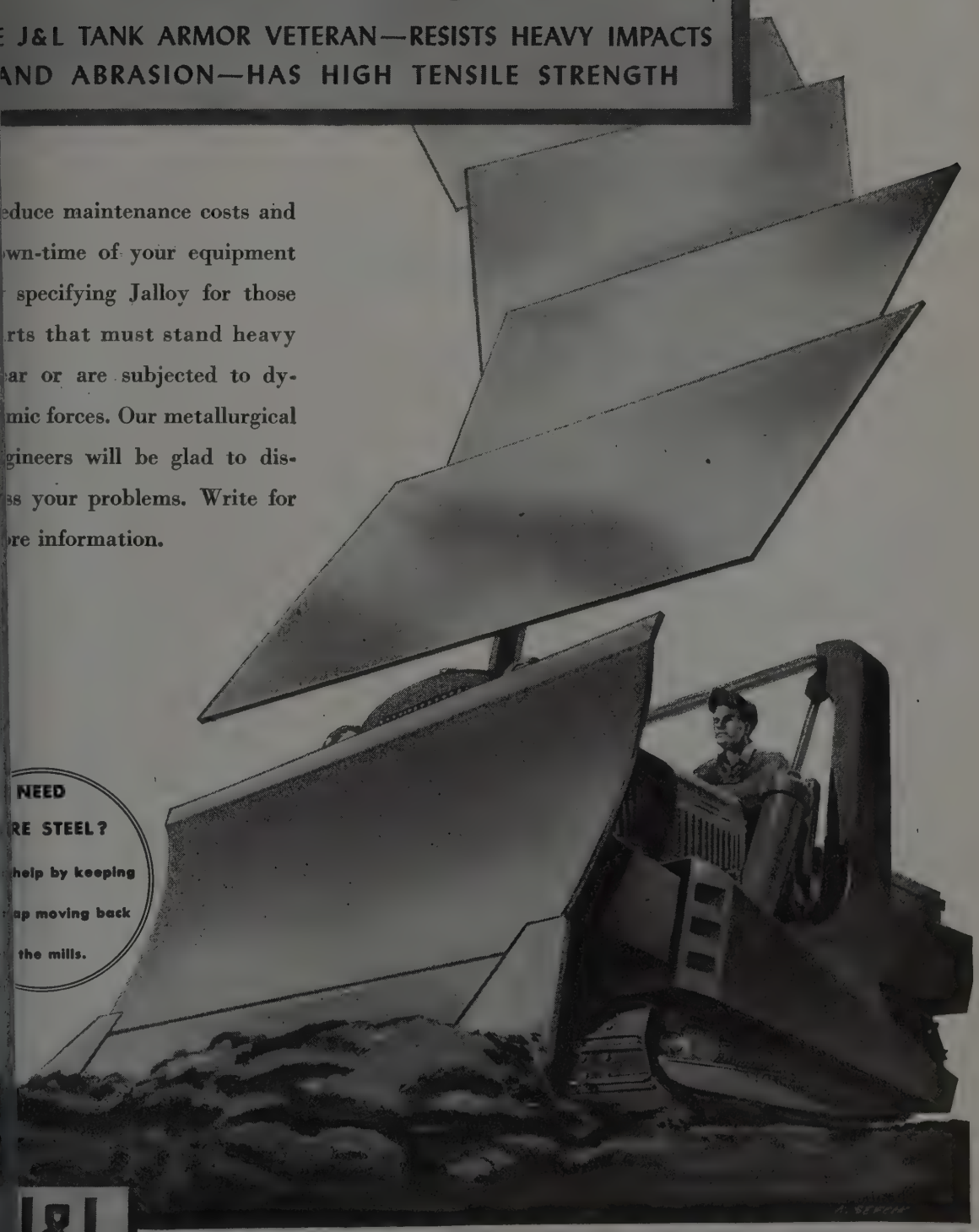

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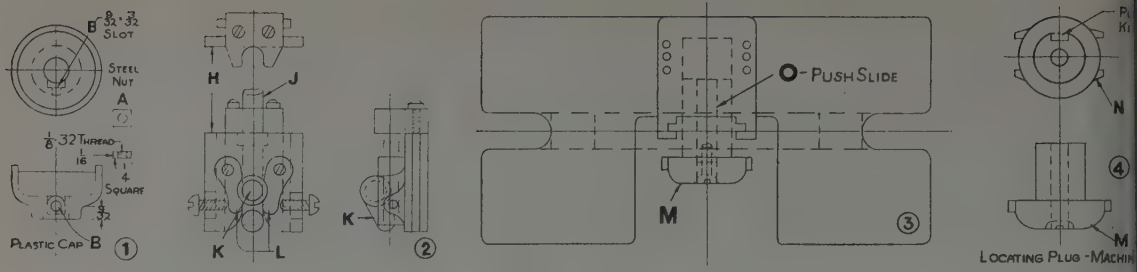


Novel Assembly Fixture

By ROBERT MAWSON

A PRODUCTION job consisted of placing a small threaded nut in the molded slot of a plastic cap and then assembling a screw into the tapped hole in the nut. A detail of this plastic cap is shown in Fig. 1, the nut A fitting in the slot B.

First attempted by hand, this means of operation was found to be out of the question because often there is a flash left from the molding operation and the nut had to remove this flash by being forced into the slot by hand. With the nut being only ¼-in. square, the job was difficult and costly.

To do this operation mechanically and at a low production cost, the fixture here illustrated and described was made and placed in service.

This fixture (Fig. 6) is made with a base C which is located by means of tongues and held in position on the table of a power driven screw driving machine. A vertical column D is located and fastened to the base by means of screws and dowels. The upper portion of the column is machined to suit the screw driver guide slide, shown in Fig. 2.

On this slide is attached a novel arrangement for adjusting the screw driver J which is used in the assembling operation. Referring to Fig. 2, two small lever cams L can be seen fastened to the plate H, which can be moved sidewise. As the inner faces of the cams are in contact with the screw driver this may be adjusted for position by moving the lever cams in or out by means of the screws.

Another feature is the chute K which guides the screws, when i in this device, into the hole B i plastic cap. In the column is l the plug, the head of which is m be the same contour as the insid face of the plastic cap. The proje N on the outer surface of the head the cap correctly by coming again edges of the projection on the pa

A push slide O, seen in Fig. made to be a sliding fit in the ke of the locating plug, this slide c to about ¼-in. from the outer e the plug. The other details con the lever P and the pusher Q, the g design of these elements being illus in Fig. 5.

To use the fixture, the operator one of the nuts in the space mark on the front elevation view, Fig. 6

(*Please turn to Page* 149)

Fig. 1—Drawing of plastic cap to be assembled. Nut A is to be assembled in slot B

Fig. 2—Screw-driven guide slide

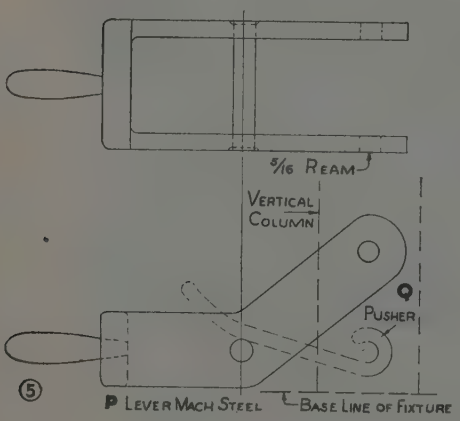
Fig. 3—Plan view of fixture

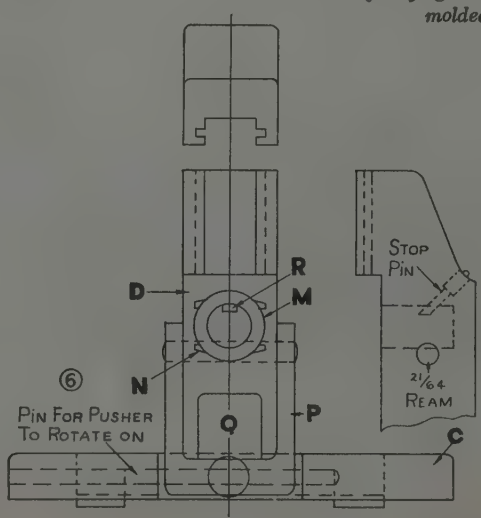
Fig. 4—Locating plug on fixture

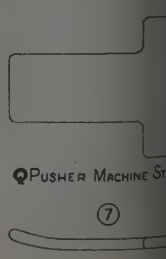
Fig. 5—Raising of lever P moves pusher Q a cap, forcing it back to face of column, bringing slide in key way against stop pin and pushing nu molded slot in cap

Fig. 6—Front and side tion drawings of ass fixture

Fig. 7—Diagram of Q, made of machine







Modifying BORING TOOLS

N changes are made in the design of machined parts
en necessary and desirable to modify boring bars and
rather than the machine. Special boring units, turret
horizontal boring machines and similar machine tools
ily adapted to specific work when correctly designed
ars are used.

ing full advantage of various standard and special bor-
it has been the experience of Davis Boring Tool Di-
Giddings & Lewis Machine Tool Co., Fond du Lac,
at machines on hand can be used to perform work
as been changed in design.

ars may be used for occasional boring jobs where pro-
does not warrant more expensive bars. Heat treated
be obtained for boring operations where cutting loads
y and a bar with high physical properties is needed.
ed and hardened bars are recommended for boring
quires resistance to wear for high production.

unusual or complex boring operations must be ac-
ed on various types of horizontal boring equipment, it
possible to use specially designed boring bars. Such bars
equipped with expanding and retracting type cutters,
ng upon the operation. One of the most important uses
bars and cutters is for boring large engine blocks. In
to this type of work, bars with block type tools may
for internal grooving, recessing, counterboring and
ng.

ple boring cuts may be performed simultaneously by
ib boring bars equipped with expanding block cutters.
of relying on single point boring tools to rough, semi-
d finish bore in three passes, special bars with expand-
ks properly spaced complete the bore in a single pass.
e features simplicity of setup. Expanding blocks may
ted quickly to bore diameters. When cutters become
complete block is removed and cutters are ground in
k. Block is then replaced with minimum handling and
g.

Correct boring bars and cutters used with standard machines handle design changes of machined parts

Above—Special boring bars are shown ready to finish bore crankshaft and cam bearings. Three sets of bars are used for three engine block sizes

Left—Precision boring operation on a turntable using block-type cutters in a line bar. Simple cutter adjustment reduces setup time

Hot-Dip Galvanizing Practice

By WILLIAM H. SPOWERS
President
Spowers Research Laboratories Inc.
New York

TWO of the largest sources of loss in galvanizing are the accumulation of oxides on the surface of the molten zinc and the heat radiation from the top of the metal.

Oxides are readily formed on the surface of all molten metals exposed to the air. The surface of the metal may be skimmed clean but instantly there forms a film of oxide which grows steadily, rapidly, and continuously as long as the metal remains molten.

These oxides contain approximately 70 per cent zinc. Because of the difficulty of converting this oxide of zinc into a useful product, however, only a small percentage of the initial cost of the zinc as prime metal can be recovered.

Galvanizing processes for such commodities as pipe and wire, on a single installation, incur a loss of many thousands of dollars per year due to the heretofore impossibility of preventing oxidation of the zinc.

As a specific case of loss due to zinc oxidization consider a standard straight wire kettle. The wire enters the galvanizing kettle at one end and makes its exit from the other. The zinc at the entrance is protected from oxidization by the volatile cover formed by the of the No. 20 neutral flux wash the other portion of the bath surf exposed to accumulate oxides fron drossing to another.

The seriousness of this loss ma reckoned from the following statist a standard straight wire installati

With an exposed surface area o proximately 6 sq ft this install accumulated 102,792 lb of zinc in a year's operation. About 70 cent of this accumulation repres zinc, which, at the market price was valent to a loss of approximately $

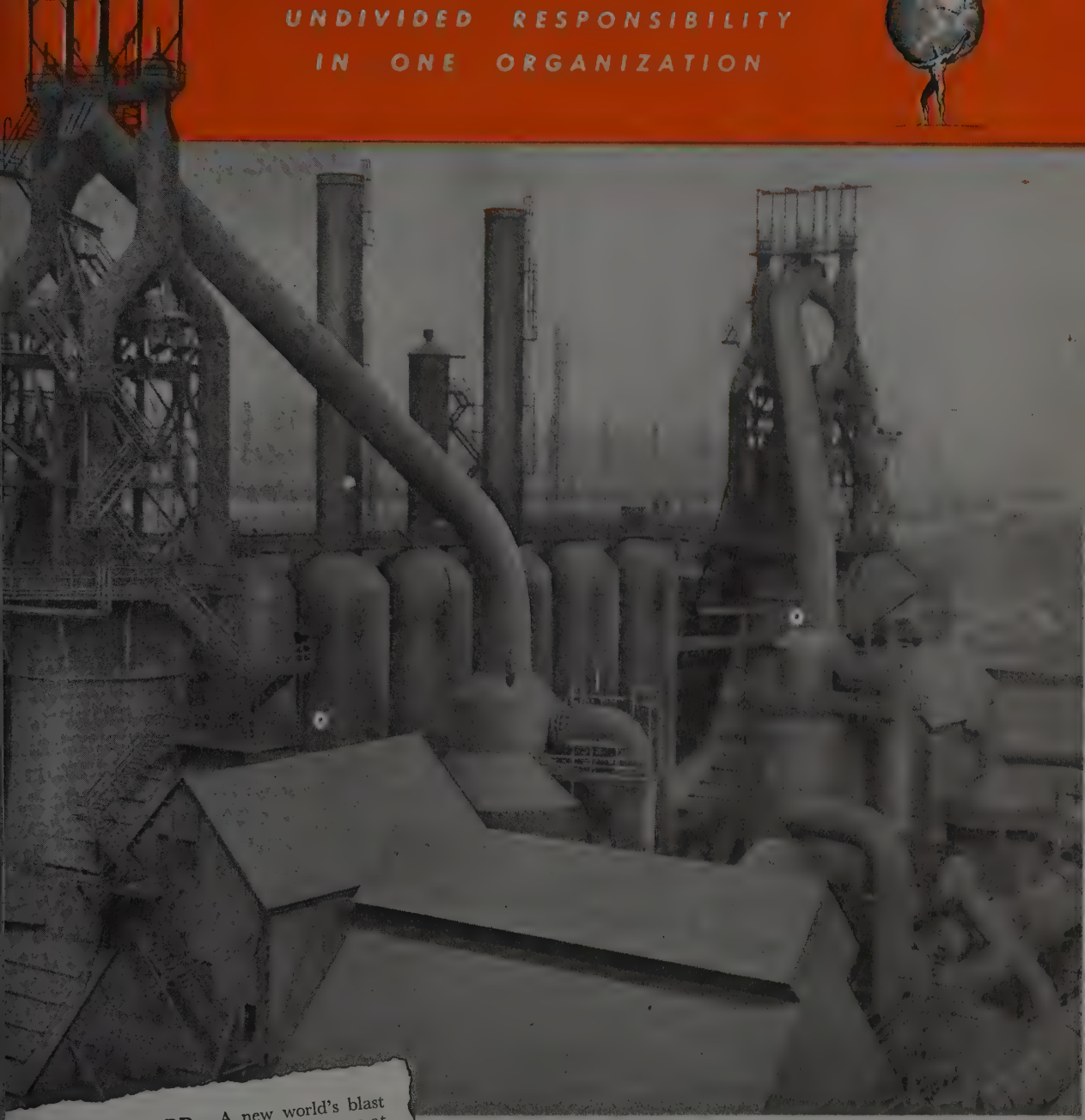
The loss at this plant totaled n 10 per cent of the new zinc used when it is considered that over 4 net tons of zinc is used annually i wire industry, the enormity of this in this country is at once apparen

With a standard pipe installation, ever, the loss is still larger. Usua pipe or tube kettle is divided len wise by a dam and the pipe is fed int kettle sidewise. On the entrance of the dam lays a blanket of vo flux which effectively prevents oxi tion. But the outgo half is exposed free to accumulate oxides.

The exposed surface area on this kettle is approximately 36 sq ft and it manufactured 1,443,552 lb of skimmings in a year which is a

Fig. 22—Exit end of wire galvanizing kettle. Growth of zinc oxides may be seen on surface of this antiquated installation

UNDIVIDED RESPONSIBILITY
IN ONE ORGANIZATION



URNACE RECORD—A new world's blast was made in July by the No. 2 blast furnace at homson Works of Carnegie-Illinois Steel Corp., tion for the month of 50,590 tons. The previous d by Great Lakes Steel Corp., which has a furnace d 49,705 tons in 1943. The new record is more use it was made without scrap charges, according ny. In making the new monthly record, the furnace weekly records and a daily record. The best weekly or the week ending July 26, when 12,189 tons of e produced and the best daily record was made on en the output totaled 1976 tons or 48 pct over the ted capacity of the unit. The monthly production over the rated capacity of the furnace.

REPRINTED FROM IRON AGE, AUG. 9, 1945

THE photograph reproduced above shows the No. 1 and No. 2 blast furnaces at the Edgar Thomson Works of Carnegie-Illinois Steel Corporation. These furnaces were designed and constructed during the war by Arthur G. McKee & Company. The record referred to in the clipping was made by the No. 2 furnace shown at left.

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loss of over 25 per cent of the new zinc used. And when it is realized that over 54,000 net tons of new zinc is used annually in this country for galvanizing pipe the enormity of this loss becomes apparent as well as that of the 2400 or more galvanizing installations in this country which are allowed to stand at night, over weekends and shutdown periods to accumulate their quota of this costly residuum.

If a blanket were to be perfected to prevent this loss in oxides it should also operate successfully in forbidding the loss by radiation of the heat now escaping from the surface of the metal.

To accomplish both of these purposes, namely, the elimination of oxide formation and the prevention of the loss of heat by radiation, the blanketing material must be capable of remaining on the surface of the molten zinc held between 820 and 900° F and still not burn, char, flash, melt or cake. Preferably it should form, upon contact with the zinc, a layer of inert gas; it should be of such a nature as to efficintly insulate the heat; and lastly, it must be easily applied and removed for repeated use.

These specifications appeared to be utterly impossible to meet but eventually after different materials were studied and combinations tested a material designated G.B. 412 was accepted.

This material is granular in appearance and upon application to the zinc surface remains in its original form. It will not burn, char, flash, melt or cake and is easily applied and removed.

Upon contact with the zinc this material forms a blanket of inert gas over the entire surface of the zinc thus effectively preventing its contact with the air and the formation of any oxide.

Because of its insulating properties, savings in heat lost through radiation have been reported between 35 a per cent with a blanket varying ½ to 1 in. thick.

The technique to be followed rately in the use of this blanket follows:

1. Using a skimming tool start end of the kettle and skim the s of metal free from oxides.

2. Immediately following the ming tool and before any oxidization place, spread the blanketing mater the surface to the desired depth. cation thus follows the skimming over the entire surface to be cove

So effective is this material in bl ing the heat that the operator is w to watch carefully the temperatu the bath at the time of first appli to obviate the possibility of exc temperature. In some instances pilot burners have been found to too great a capacity.

(To be continued)

Positioning LARGE WELDMENTS

ADVANCEMENT of welded fabrication has been rapid in the last few years and with this advance has come the problem of economical handling and positioning of large weldments.

The uses of positioning fixtures are limited only by the ingenuity of the designer and welding operator. The Chain Belt Co., Milwaukee, saw the need for a special fixture to position large weldments. A setup was built using a standard 6000-lb capacity positioner, electrically driven, and set on a fabricated adapter frame worked in conjunction with a tailstock, as seen in the illustrations.

As shown in Fig. 1, the tailstock is constructed almost entirely of welded fabrication and consists of a base frame-

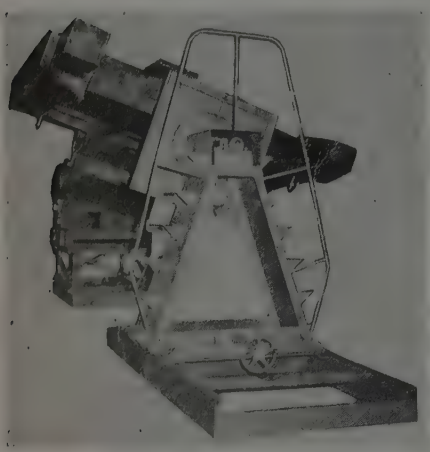
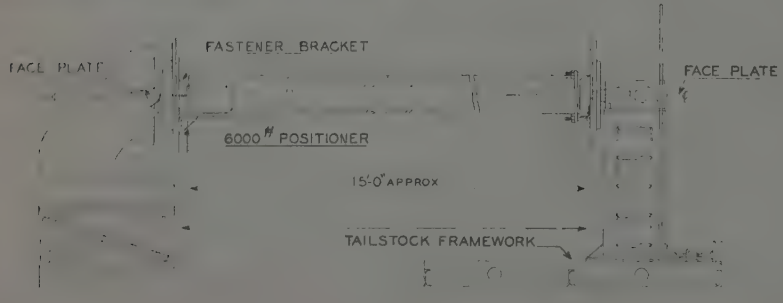


Fig. 1 (left)—Weldment positioning fixture by Chain Belt Co. A-Frame tailstock is in foreground and positioner in background. Tailstock permits different lengths to be rotated for downhand welding

Fig. 2 (below)—Diagram showing standard 6000-lb positioner used with adjustable tailstock



work with machined surface runner an A-frame pedestal with machined runners. A heavy cross clamp holds two component parts together. S the unit to close measurements is ac plished by a built-in adjusting screw

The A-frame carries a face plate shaft, bearings, etc., aligned with face plate on the positioner. Face and solid anchor tubes are set int floor to tie down the tailstock unit use in welding products of extreme ferences in length, the entire frame of the tailstock is shifted to the p anchor points and locked in place. aforementioned handwheel adju screw makes the final adjustments.

The tailstock of the positioner steps up the side of the A-frame as as a guide rail to assist the operat mounting the weldment. Adapter bra are fastened to the face plate on positioner and tailstock, as shown in 2. Various adapters were made to f the parts to the face plates in line in the same square plane. Weldi designs call for sections varying width from 2 ft 10 in. to 10 ft 1 and in lengths up to 15 ft. The stan positioner at the opposite end from tailstock can be used separately smaller weldments do not require th of the tailstock.

Awkward to handle products suc frames, hoppers, casings and large b ets in a wide range of sizes are w in this setup. Results show that in this design, it is possible to control w ing procedure to much better ad tage, good results being obtained in l unit cost with safer handling. The al to obtain downhand position welds better uniformity also gives better sults.

reserving Artillery

(*Continued from Page* 102)

½-hour intervals over a 4-day period. xtreme skin temperatures during the st ranged from 40 to 140°F. Results f the test indicated that, regardless of e 100°F differential temperature ob-ined on the skin, the metal simulating e gun inside the container remained at actically constant temperature in both ntainers. On this basis the conclusion as drawn that no insulation was re-ired inside the containers.

Preparatory to painting, all exterior rfaces were prepared by grit blasting d given a treatment of phosphoric and romic acids.

Specification for the exterior protective ating called for a prime coat of paint, gmented principally with red lead but odified with some basic lead chromate. hicle specified was a full alkyd resin ntaining no admixed or otherwise un-mbined drying oils; an intermediate own coat pigmented with red lead and n oxide, vehicle the same as before; blued aluminum coat with the vehicle nilar to the prime coat; and a finish at of aluminum made up of 2 lb of minum paste to 1 gal of liquid, again ing the same vehicle used for the prime at.

Interior surfaces of the containers were t given protective coatings for a two-ld reason. First, because of the non-rrosive atmosphere within the con-ner it was deemed unnecessary to pro-le any protection. Second, it seemed tirely logical to leave the steel sur-es of the container exposed on the in-le so that any oxygen which might be esent would have a chance of being uestered by the metal of the con-ner and tend to prevent such oxygen rroding the metal in the artillery.

The leak indicator gage is constructed it is self-compensating for any changes pressure due to temperature varia-ns. One of the bellows is subjected ernally to the nitrogen pressure present the pack. The other bellows forms e end of a completely sealed thermo-tic system which consists of the bel-vs, capillary tubing and a bulb. Both llows are assembled so no movement cs place as long as the pressures in h are the same. If, however, one is ject to a lower pressure than the er, the center section of the bellows embly will shift toward the low pres-e end and, by so doing, will move the d of the gage, indicating that nitro-n should be added to the pack, or t the gage is faulty and should be re-ced.

Thermostatic system of the gage is jected to the same temperature con-ions as the nitrogen in the pack, since it is enclosed within the pack. Before the bulb is sealed it is filled with nitrogen to a pressure corresponding to 6 psi at 70°F. Gage is calibrated so that when a similar pressure of nitrogen is introduced into the pack, the two bellows balance each other and the indicator on the gage moves to the center point. This method indicates the proper amount of nitrogen required to fill the pack to the pressure desired, regardless of the temperature at the time of the filling process.

In the construction of containers, submerged arc machine welding was used whenever possible. All other welding was electric metal arc type, manually performed. The machine type weld was found to be sound and gas-tight. It is, of course, very desirable that wherever manual welding is necessary, the work be manipulated so that welding is done in the flat or horizontal position rather than the vertical or overhead position.

Sheet Metal Boxes Built

Spare parts and canvas covers were in all cases, with the exception of the 75 mm guns, packaged in sheet metal boxes especially built for the purpose. Boxes were securely strapped to the base plate of the respective containers. It was necessary to protect the spare parts, which are packed in chests, from vibration and shock loads encountered during movement of the containers. Hair felt was found to be satisfactory for this purpose.

No drying of spare parts was deemed necessary as the surface area of these parts is relatively small compared to that of the gun or the pack itself, and the moisture that might be contained on these parts is negligible. The hair felt, however, being of a hygroscopic nature, was dried with the canvas in the drying room. Each spare part was wrapped separately in dried hair felt packing before being placed in the chest.

Before dynamic drying of the container, dried air from the drying units was used to supply 10 psi pressure in the packs for soap testing for leaks. By using dried air for soap testing, packs were partially dried and the dew point lowered to a considerable degree before dynamic drying began.

The containers were dried dynamically by the use of 90 psi compressed air passed through regenerative type silica gel dryers. Compressed air at 70°F in a saturated state was discharged from the drying unit with a dew point of minus 45°F. It was then conducted through heating coils, and the temperature raised to about 165°F. This air then was introduced into the container through the manhole opening by means of a 3-in. flexible metallic hose with an ejector type T section.

By means of the ejector some air was recirculated and some escaped from the manhole opening. Escaping air was sucked into a tube by means of an electrically driven fan and passed through a recording psychrometer. Experiment revealed that when the dew point of the escaping air dropped about 20°, dynamic drying can no longer be continued economically. Data were based upon dry-

BIG SCOOP: Said to be one of the world's largest, this 2,400,000-lb electric dragline excavator at Maumee Collieries Corp., Terre Haute, Ind., has a bucket capacity of 25 cu yd—equivalent to 37 tons of earth and rock overburden. Machine is equipped with General Electric motors and control equipment with total rating of well over 6000 hp. Two motor-generator sets, each driven by a synchronous motor, convert incoming alternating current to direct current for operating dragline constructed by Bucyrus-Erie

ing at a rate of 200 cfm of free air.

Drying rate was determined by use of an electric type integrating and indicating flow meter. The integrating feature on the meter is desirable to determine the end of each cycle when regeneration becomes necessary. At the start of the contract the fire control division of the Ordnance Department, located at Frankford Arsenal, determined from test that no material within a container would be damaged by temperatures up to 165°F. At conclusion of the period of dynamic dehumidification sufficient silica gel was placed in the container to act as a static desiccant and take up residual moisture as this transforms to vapor phase in the finally closed container. Twice as much silica gel as indicated by calculation was used to assure positive protection.

By using this method a positive elimination of oxygen is assured to a final volumetric analysis of 1 per cent or less. It is a positive test because diffusion of gases is not a factor. The air is merely pumped from the pack until an absolute pressure of approximately 1 in. of mercury absolute is achieved. This means about one thirtieth of the original volume of oxygen remains at the end of evacuation. At this time pure dry nitrogen is permitted to enter the evacuated space in the pack. After this is done, the final pressure is allowed to build up to a gage pressure of approximately 6 psi.

It was evident it would not be economical to design all containers of sufficient strength to withstand the external pressure imposed by evacuating to a pressure of about 1 in. Hg absolute. To avoid necessity of so constructing the containers, a decompression chamber 15 ft in diameter, 27 ft long was installed, as shown in Fig. 1.

Two vacuum pumps were installed, one connected directly to the decompression chamber and the other connected through the decompression chamber and, by means of a 2-in. hose, to the container. Pumps connected to the chamber and the container were of such relative capacities as to create a vacuum in each of the vessels in equal amounts. This assured practically uniform external and internal pressure on the gun containers during the process of evacuation. Two mercury manometers were connected, one to the decompression chamber and one to the line from the gun container, to insure equal reductions in pressure and evacuation of the container to 1 in. mercury absolute. With the equipment available, the time of evacuation was 30 min.

Moisture-Free Nitrogen Used

After pressure within the container was reduced to 1 in. mercury absolute or under, the line to the vacuum pump was shut off and, through a tee connection between the shut-off valve and the container, moisture-free nitrogen of 99.998 per cent purity was introduced from a cascade system. Nitrogen was supplied to the system in liquid form, which adds materially to the successful attainment of specified conditions of humidity. Nitrogen supplied in bottles contains considerably more moisture.

At the same time that nitrogen was being introduced into the container, the vacuum in the decompression chamber was broken and air admitted at such rate the two manometers indicated that the external and internal pressures of container were again held practi equal until atmospheric pressure reached.

Container then was removed from decompression chamber. Nitrogen sure was built up to approximately as indicated by the gage. Valve closed and the connection broken, pleting the final sealing of the conta At this point in the process the point of the gaseous contents of the tainer averaged about minus 4°F. silica gel, which was previously insta has such relatively large absorbing pacity in relation to the very low ture content of the gases that within hours the dew point dropped to at minus 16°F, indicating that the spe cation calling for not more than 10 cent relative humidity at 0° C had met. At this stage of the process analysis indicated that the oxygen tent of the container amounted to per cent.

Most critical requirement for the cess of the program would be the ab to produce pressure-tight contain Leakage tests were conducted using following methods:

Bubble testing by spreading o the container compounds in the ture of soap solutions or other s tions forming films having suffici strength to produce a bubble wh ever gases were escaping beneath film.

Painting a fluorescent penetrat oil on one side of the welded jo and after a period of time examin the other side of the joint under ul violet or black light. The penetrat oil is supposed to travel through v minute openings and its presence the side of the joint opposite to t which is painted is indicated by fluorescent glow.

An alcohol-burning torch to in cate leakage of Freon from a pr sure vessel into which this gas been injected. When the torch passed over joints on the outside the pressure vessel, its flame will discolored if an appreciable amou of gas is escaping.

The only two tests that appeared sen tive enough for the purpose requir were the bubble method and the spec torch. The latter test, however, attain a sensitivity equal to the bubble testi only when the containers were suppli with gas in such quantities as to be u economical. As a result, the bubble te ing method for leaks was adopted in t production program. Theoretical calc lations indicate that any leak too sm to be determined by bubble testing w afford loss of gas in such small quan ties as to give pressure drops which a

NEW PRODUCTS

Dual Headed Hammers — Combination steel and rubber head affords dual use for both heavy and light work. Dan Morey, Department D-24, 814-16 South Robertson boulevard, Los Angeles 35.

Drafting Machine—Universal Boardmaster features centralized control group which locates every operating control at the fingertips of the left hand. Universal Drafting Machine Co., Cleveland 14.

Full Vision Splash Hood—Designed to give full head coverage on operations where hazard of acid splash, caustics, solvents and other substances is present. Industrial Products Co., 2833 North Fourth street, Philadelphia 33.

Catalog Binder—Tri-Lock opens flat and stays open at any point. Touch of a button changes compression binder into a flat reference binder. Control button unlocks binder. Systems & Methods Research Department, Remington Rand Inc., 315 Fourth avenue, New York 10.

Roll Paper Dispenser—Mounted on wall and when several kinds of paper are used can be superimposed one above the other without interference. Paper tears off with clean smooth edge. Lefebvre Freres Ltd., Montreal 18, Canada.

Thermostat—For general application at 120-240 v ac. Constructed of aluminum and plastic. Cam-Stat Inc., 2037 South La Cienega, Los Angeles.

Coaxial Cable Connector — For making water-tight coaxial cable connections, for antennas, also serves as center insulator for half wave doublet. Made of aluminum with steatite insulation and has two forged steel eyebolts. Barker & Williamson, 235 Fairfield avenue, Upper Darby, Pa.

Corrosion-Resistant Coatings—Penetrates any porous surface, metals, wood, concrete and similar or allied products, blocking off moisture penetration, acid reaction, retarding corrosion, rotting and disintegration of structural material. Protective Coatings Inc., Box 56, Detroit 27.

Pressure-Compensating Packing Rings — Palmetto Pyramid Packing available in molded ring form and made to exact dimensions. May be used for rotary as well as reciprocal action. Greene, Tweed & Co., Bronx boulevard at 238th street, New York.

4608

ROCKFORD Hy-Draulic MACHINE TOOLS

sixteen years ago the Rockford Ma- Tool Co. introduced the first hy- lic reciprocating machine tool. Today belief in the superiority of hydraulic gn stands justified, for Rockford Hy- lic Machine Tools have proved them- s wherever and however employed. exclusive and highly specialized en- ering experience that has been ours is applied in each machine tool we l.

ery Rockford Hy-Draulic Machine offers such basic advantages as:

Ease of control for quick set-up and fast operation.

Stepless Speeds . . . infinitely adjustable throughout a wide specified range. Hy-Draulic tool-head feeds similarly adjustable.

Efficient, smooth hydraulic pressure . . . maintains cutting speed as set, no matter how work resistances vary.

Smooth, fast reversals and high return-stroke ratios. Oil flow through Hy-Draulic System reverses instantly. Simplicity of Hy-Draulic System holds inertia factors to a minimum.

Fine finish and long tool life. Smoothness of Hy-Draulic drive, free of mechanical play and vibration, protects work and cutter.

ockford Hy-Draulic Machine Tools re quality work with speed at minimum . Let the Rockford sales ineer give you complete rmation.

OCKFORD Y-DRAULIC Ram Type HAPERS

eyes on the job...

Whether your job is toolmaking, maintenance, or general machine shop work, the ease of Rockford Hy-Draulic shaper operation will be readily apparent. Rate of table feed and cutting speed, and length of cutting stroke are all obtained by simple lever control. Feed, speed, and cutting stroke length can be varied as required while the shaper is in operation. Such operating flexibility and ease are two advantages that result from Hy-Draulic drive and feed. The machine operator is free at all times to keep his eyes on the job. Control levers are all within easy reach.

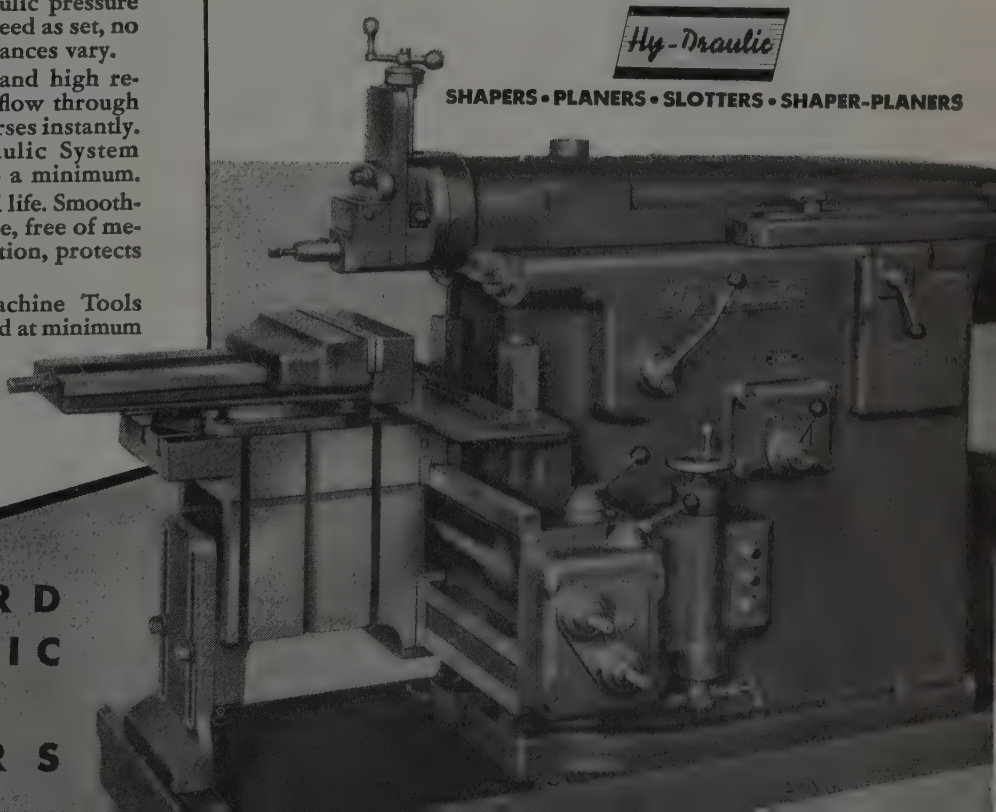
To improve shaper work in your shop . . . to obtain faster work and better work, with minimum operator fatigue, investigate the Rockford Hy-Draulic Ram-type Shapers. Six rated stroke length sizes are available ranging from 12″ to 28″ stroke. Write for Bulletin 2918.

ROCKFORD MACHINE TOOL CO.

ROCKFORD, ILLINOIS

Hy-Draulic

SHAPERS • PLANERS • SLOTTERS • SHAPER-PLANERS



negligible so far as this program is concerned.

A mass spectrometer adapted as a helium leak defector proved a very adequate and desirable instrument for making an overall test of the finished container. Note Fig. 5. A container is charged with a mixture of helium in nitrogen or air to about atmospheric pressure. It is then placed within a chamber, such as a decompression chamber. The chamber housing the container is then evacuated, preferably to a very low absolute pressure. The mass spectrometer is connected to the vacuum chamber and samples are drawn into the spectrometer tube in which an absolute pressure in fractions of a micron exists. Any leakage of helium from the container to the vacuum chamber is indicated on the output gage of the mass spectrometer. By this method the presence of helium can be determined to a degree of sensitivity equivalent to one part in two hundred thousand.

It was originally agreed that finished containers of major combinations should be kept in storage at the production site for periods of probably 60 to 90 days to determine the fact that they were adequately tight for shipment to storage sites. Under a program where large production is required, vast storage spaces would be necessary under this method. The use of the mass spectrometer to indicate adequate tightness of containers immediately upon completion of their production would eliminate this necessity and present a very economical answer to this phase of the problem. The result is available in 1 min after 100 micron pressure is attained in the decompression chamber.

Book Covers Sawing Instruction Program

Intended primarily for use in educational and vocational institutions, Volume I of instruction programs for machine tools and gages covering the technique of contour sawing is being made available by DoAll Co., Minneapolis. Recognizing contour sawing as a vocation, the company states that the purpose of this first volume and the series as well, is to make better and more va operators with the end result be savings in time, material and man

First of the two general parts 264-page book covers conventional tour sawing. Chapters on set up an eration, for filing and for cutting, a ment demonstrations, maintenance, ing aids, vocational films and tool m with contour saws are included i section along with projects and gr guides for determining progress.

Part Two covers friction sawing saw selection, cutting rate, saw life Applications of friction sawing to minum, ferrous castings, formed plastics and other materials are also ered as well as friction contour sa

Other parts of the training bool concerned with the Zephyr, DoAll's speed sawing machine, band filing tures and maintenance demonstra and the company's research labora

Volume I of this instructional pro is available for use in industrial tra programs as well as to vocational sc and educational institutions, details obtainable from the company.

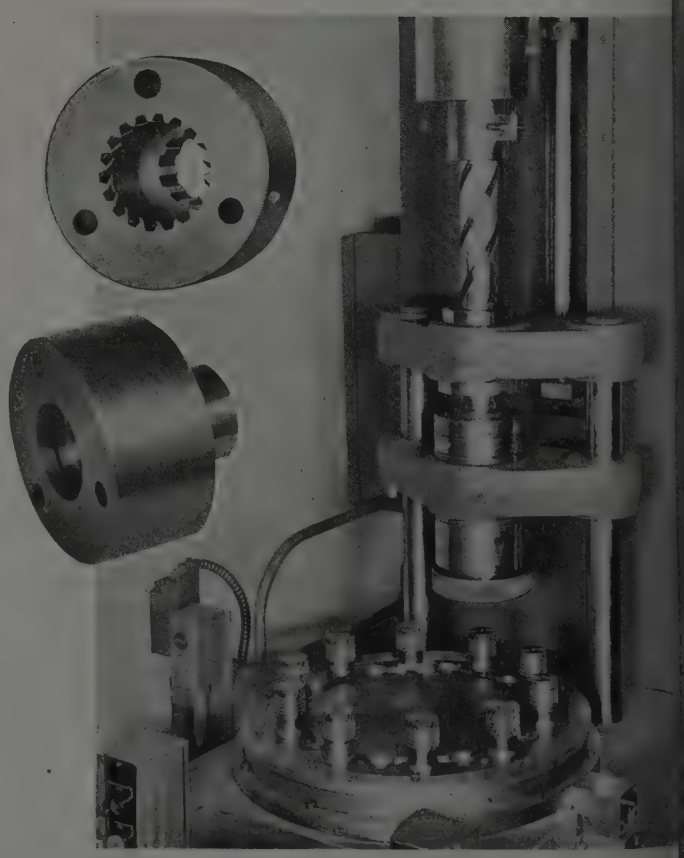
BROACHING BLIND HOLES

AN unusual use of broaching has been developed by Colonial Broach Co., Detroit, for production of helical splines in a blind hole connection with transmission part, the design being such that the tool cannot pass through the work. Use of broaching was made possible by undercutting a recess beyond section of part to be splined for broach clearance at end of cut. Inset shows part before and after broaching.

Ten short broaches, each with five sets of cutting teeth, are used in place of a single long broach, note illustration. The part is held in a moving ram head which is equipped with a master lead bar actuated by movement of ram. Broaches are mounted on a hydraulically actuated indexing table.

The machine cycle is completely automatic, operator merely loading part and pushing a button to start ram moving down, and pushing part over the first broach. The ram returns and stops, and table automatically indexes to next station, after which the cycle is repeated, continuing until part is finished.

As part is stripped off the broach on each return stroke, broaches must be exactly spaced and located so teeth of different broaches will track each other as they progressively cut spline to finished size and shape. Cutting effect of the 10 short broaches is the same as if a single long broach were used.



another Baldwin Hydraulic Press

TO SPEED NEW PRODUCTS

A large consumer goods manufacturer has recently purchased his second 200,000 lb. Baldwin Hydraulic Press. A re-order is always the best testimonial to the quality and performance of equipment.

This fully-automatic Baldwin Hydraulic Press combines all the newest proven developments to step-up production, reduce rejects, provide for maximum safety and give ease of operation. Has high approach and pressing speeds, electric eye-safety control. Baldwin Hydraulic Presses offer the unusual combination of custom-built quality in the standard line. A Baldwin Field Engineer will be glad to discuss your press problems with you. The Baldwin Locomotive Works, Locomotive and Southwark Division, Philadelphia 42, Pa., U.S.A. Offices: Philadelphia, New York, Chicago, St. Louis, Washington, Boston, San Francisco, Cleveland, Detroit, Pittsburgh, Houston, Birmingham, Norfolk.

Self-contained, moving down type, 24-ft. high, 50-in across, 200,000 lbs. weight. Single-acting ram, 43-in. diameter with 24-in. stroke, 28-in. daylight.

BLW THE BALDWIN GROUP

BALDWIN

SOUTHWARK

HYDRAULIC PRESSES

Industrial Equipment

Throat Chaser

Landis Machine Co., Waynesboro, Pa., announces a centering throat chaser for work that must have threads concentric to outside diameter. It is especially adapted to threading of valve stems and other long length threads of coarse pitches.

Chaser is used only when outside diamter of work is held uniform since center-

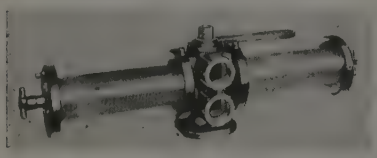
ing throat section of chaser takes a bearing on the outside diameter. It is also flexible in that any difference on outside diameter can be corrected on the centering throat to maintain proper pitch diameter.

Another feature of the chaser is it eliminates out of round condition that exists when long work pieces are threaded. Centering throat takes a bearing as soon as chaser contacts work and assures accurate and well formed threads from the start.

Steel 9/16/46; *Item No.* 9545

Duplex Pipe Line Strainer

A new duplex pipe line strainer made with a transparent Lucite casing that permits visual inspection is offered by J. A. Zurn Mfg. Co., Erie, Pa. Without disturbing the strainer, a maintenance



man, engineer or operator can see whether strainer unit needs cleaning. If it does, flow can be diverted into the other chamber without loss of pressure and the filled chamber can be cleaned while the pipe line maintains its normal flow.

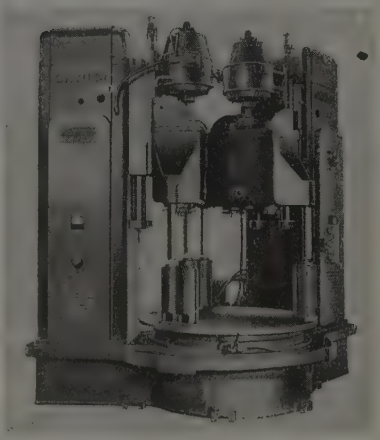
Large open area capacities afford free movement of fluids throughout the unit; 16 to 1 ratio with 12 in. tubes and 8 to 1 ratio with 8 in. tubes. Of flat horizontal design, strainers are made with bronze bodies, handle, caps, tie rods and nuts; strainer baskets are available in brass, monel or other metal.

Steel 9/16/46; *Item No.* 9766

Boring Machine

Compressor casings and cylinders in a wide variety of sizes are bored by a special purpose machine manufactured by Snyder Tool & Engineering Co., 3400 East Lafayette, Detroit. While primarily intended for dry work on cast iron, base of machine is designed also for use of coolant.

Machine consists of a welded steel base upon which are mounted two hydraulic



column and platen assemblies and a manually-operated index table operating upon antifriction bearings. Each of two-spindle boring heads is driven from an individual variable-speed direct current motor, and each boring spindle is equipped with special clamps to permit boring bars to be exchanged quickly.

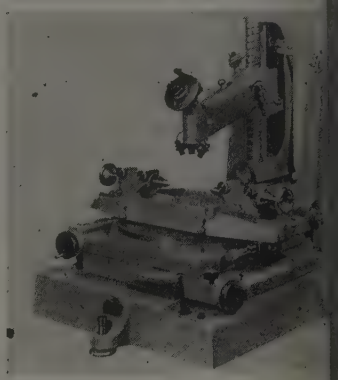
Spindle speed is controlled by rheostat to motors and is shown on an indicator. After setting, spindle speed, rate of tool feed and depth of cut are automatically maintained.

Steel 9/16/46; *Item No.* 9588

Toolmaker's Microscope

Gaertner Scientific Corp., 1201 Wrightwood avenue, Chicago 14, announces a large toolmaker's microscope having a mechanical stage with a co-ordinate range of 8 x 4 in. combined with 360 degree rotary motion and capable of supporting a load of several hundred pounds. Co-ordinate motion is by means of m meter screws which reads to 0.00(Angular measurements can be read min. Principal applications include in tion and measurement of large tools, templates, machine parts, threads similar items being held to close ances.

Instrument consists of mecha stage, a 30-power microscope mou on a support column which has mic



eter tilt up to 15 degrees each sid vertical, a removable cradle for sup ing objects not readily mounted on th surface of stage, and suitable surface substage illuminators.

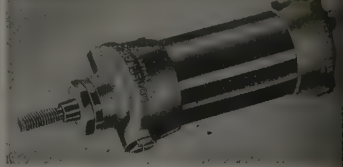
Microscope is equipped with an ternal protractor for rapid angular m urements to ½-degree and a protra ocular head by means of which angles be read to 1 min. Magnifying power be varied from 10 to 100 by intercha able objectives.

Steel 9/16/46; *Item No.* 9589

Cushion Type Cylinder

A cushion cylinder featuring i changeable mounting developed by M ernair Corp., 4222 Hollis Street, Oak 8, Calif., is designed to permit divers use of the same cylinders.

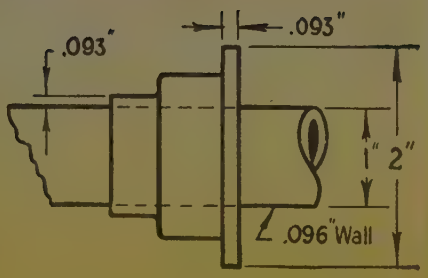
Cylinder caps are heat treated alu



num alloy sand castings with high te and bursting strength. Design per caps to rotate 360 degrees on cylin without disturbing seal, a feature wh generally eliminates need for elbow "T" fittings to bring a line into or

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 136.)

How "Job-Rating" can improve YOUR designs!



TYPICAL JOB

Assemble and join thin mild steel stampings and tube to resist torque, compression and shear.
No distortion or surface marking permissible on tube.
Total units required—50,000
Production required—1200 per 8-hr. day

JOB-RATING

METHOD	BEST OUTPUT	MAX. STRENGTH	MIN. FINISHING REQUIRED	LOWEST COST PER PIECE
SPOT WELD	1	1	1	1
ARC WELD		2		2
TORCH WELD				
SOLDER (TORCH)			2	
FURNACE BRAZING	2			

List possible joining methods and controlling factors, as above.
Rate the methods 1, 2, for each design factor.
Select the best method. Check your design with this method in mind.

ANALYSIS

Watch resistance welding come up No. 1 on every count! This example shows over 70% savings for spot welding over the second best method, in labor costs alone. In addition, strength is "tops". There is no distortion. Output is far ahead of other methods. Only design factor involved is to make sure there is room on the sleeve for the spot welds. Your analysis may also show similar advantages for resistance welding in a vast majority of assembly problems. 'Progressive' machines, such as the spot welder at left, prove that it pays to weld on job after job. Send for "Welding at Work"—booklet WP-44—describing over 100 different "Progressive-Welded" designs.

PAYS TO WELD

PROGRESSIVE Welder Co. 3050 E. OUTER DRIVE • DETROIT 12

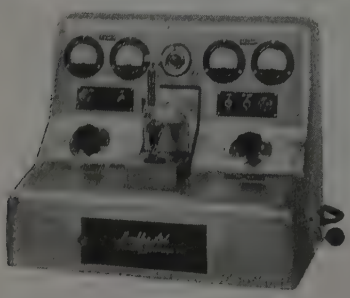
RESISTANCE WELDING EQUIPMENT

of this cushion type cylinder.

Aircraft type O ring packings are used throughout cylinder at points of wear or possible leakage. It is corrosion resistant, and may be used for actuation by air, water or oil. Cylinders are manufactured in 2, 3, 4, 5, and 6 in. diameters.
Steel 9/16/46; *Item No.* 9613

Electropolisher

Buehler Ltd., 165 West Wacker drive, Chicago 1, has developed Buehler-Waisman electropolisher for polishing both ferrous and nonferrous metals, using only a small amount of nonexplosive solution. In operation, the specimen is made the anode of an electrolytic cell. Charged atoms or ions from the specimen enter the electrolyte, resulting in a polishing film



which covers surface of specimen and offers resistance to passing of the current.

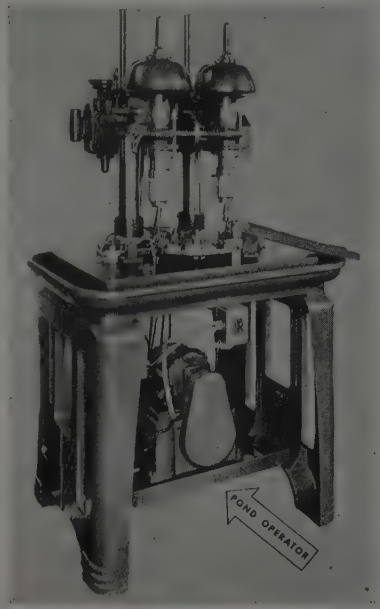
Processing results in a uniformly flat surface as the polishing film is thinner on the high spots, allowing more current to flow in these areas and consequently removing more metal. Advantage of electropolishing is freedom from disturbed metal on surface of sample—an important consideration with those metals which are susceptible to co'd working. Many samples may be etched after polishing, with same solution, by reducing applied voltage.

Electrolyte is contained in stainless steel tank. Specimen is fitted over hole in tank and brought into contact with solution by tilting tank down. This action operates mercury switch which starts agitating pump. Switches, meters and knobs for controlling duration of polishing and etching are mounted on control panel.
Steel 9/16/46; *Item No.* 9760

Tapping Machine Converter

Pond Engineering Co., Springfield, Mass., has designed an automatic control unit for converting hand-operated tapping units to automatics, with an increase in production rate of many small parts. Accurate indexing, locating, clamping, tapping and ejecting are all accomplished on a turntable fixture actuated by Model 600.

In machine shown, two different pieces are handled simultaneously—each piece having one hole to be tapped—and pieces are even separated during ejection, by chute which is divided in the middle. An attendant is required to feed the machine if the piece can not be adapted to hopper or magazine feed. Different pieces of a similar nature can be handled on this same machine, simply by changing holding blocks on turntable. Combined operations—drilling, tapping, reaming,



riveting, grinding, and many others are possible.

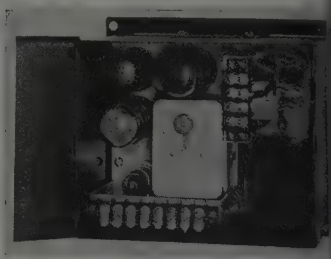
Machine is primarily a control unit with a one cycle air-clutch-operated cam shaft, powered by a 1/3 hp motor. Cycle speeds are adjustable from 2 to 1 min depending upon the operation performed, but longer cycles are available. Frequency and duration of impulses per cycle are adjustable on air valve cams.
Steel 9/16/46; *Item No.* 9625

Thermal Protector

Manning, Maxwell & Moore Inc., Bridgeport 2, Conn., announces a new Ashcroft thermal protector—a thermocouple actuated limit switch for use in air ducts of industrial ovens, dryers, bearings of large motors, blower wheels, flue gas stacks of boilers, plastic injection presses and reheaters. Temperature chosen as high limit is set by an operating knob located inside case. If this temperature is reached, the device will stop apparatus before excessive damage is done, or it can be arranged to sound an alarm or light a light.

Device will also stop in case of burning or breaking of thermocouple, fa of power supply, tube or mercury sv Further protection is provided by a m al reset which makes certain that s thing is done to correct the cause b the equipment is damaged or produ is seriously interrupted.

Thermal protector is designed two ranges, 100° F to 1000° F an IC couple, and 800° F to 200 using an alternating current couple an accuracy of 2 per cent of range



set point. Two or more couples may connected, in series if desired. Cur characteristics are 115-230 v 60 cycl 15-20 w.
Steel 9/16/46; *Item No.* 9624

Live Centers

Royal Products, New York, is introc ing a line of Monarch live centers, in changeable for different operations have an accuracy of plus or minus 0.00 in. tolerance when points are interchan Accuracy is achieved through tape seat on points and in base which n and align point.

Live centers enable deeper cuts to taken at higher speeds with no bur out or scored center holes. It is grea through opening formed when point removed. Replacing of point seals be ings against foreign matter. Centers n be used in lathes, screw machines, cyl drical grinders, milling machines thread millers.
Steel 9/16/46; *Item No.* 9452

Drum Sling

Trylon sling kits for all light weig lifting introduced by Wire and Cable I vision of Wind Turbine Co., West Ch ter, Pa., are designed for hoisting dr type containers. Slings make handling barrels, kegs, chemical and oil containe large cans and similar items a safe ope tion.

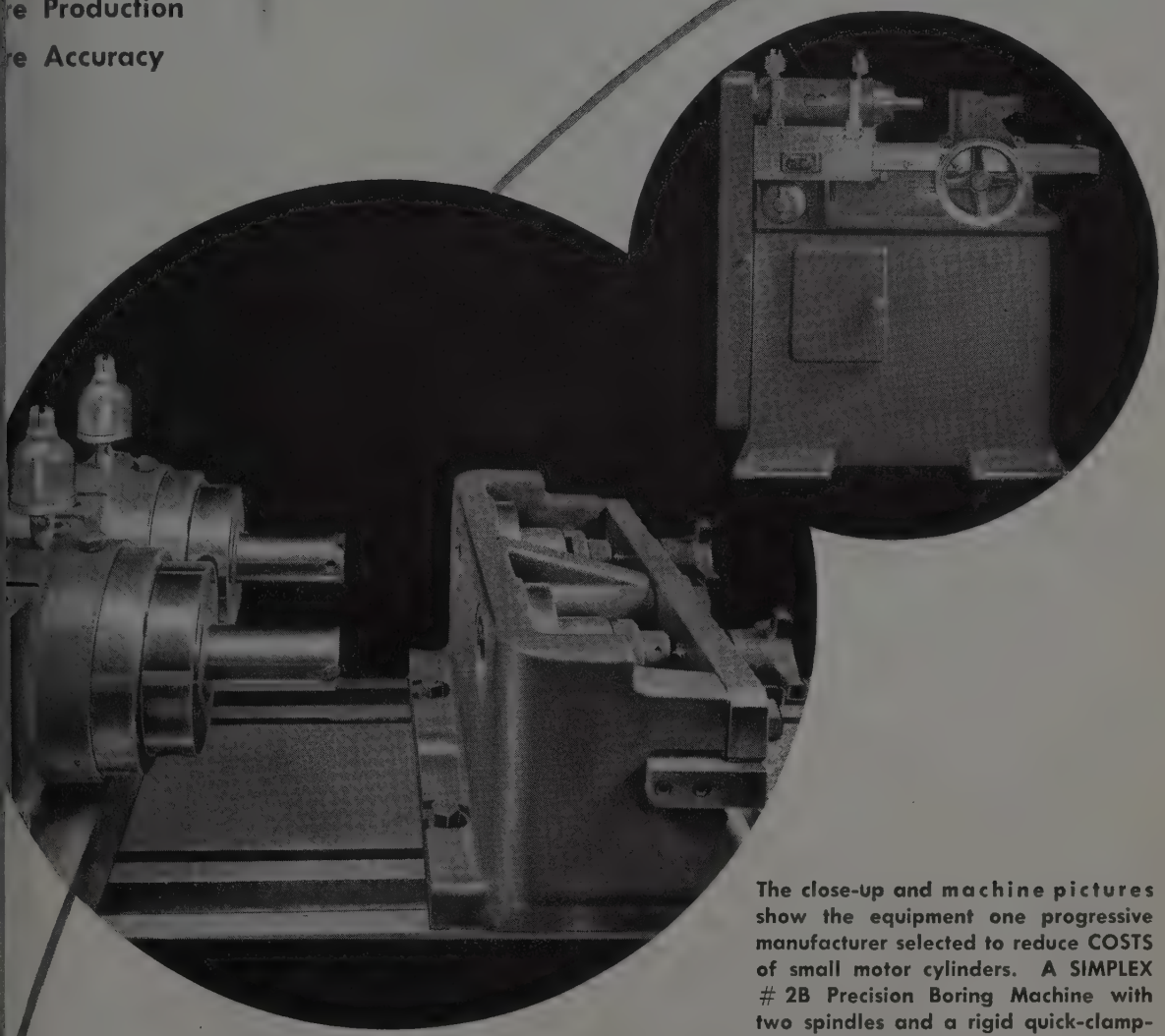
Heavy clips mounted on a rod w an adjustable pressure spring at each e of the sling grip the container secure until it is deliberately released. Spaci of clips can be altered and positioned fit any size barrel, drum or keg. Sli

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 136.)

SIMPLEX

MENTS OF COST REDUCTION

- Labor Cost
- Tool Cost
- Machine Cost
- re Production
- re Accuracy



The close-up and machine pictures show the equipment one progressive manufacturer selected to reduce COSTS of small motor cylinders. A SIMPLEX # 2B Precision Boring Machine with two spindles and a rigid quick-clamping fixture provide all the elements of cost reduction listed above.

Precision Boring Machines

STOKERUNIT CORPORATION

SIMPLEX Machine Tools Division

4532 West Mitchell Street, Milwaukee 14, Wisconsin

cision Boring Machines, Planer Type Milling Machines and Special Machine Tools

is equipped with 5/16-in. plow steel wire rope and has a minimum breaking strength of 8000 lb.

Steel 9/16/46; *Item No.* 9542

Flexible Shaft Grinder

Spring Specialty Co., Maywood, Ill., announces a high speed, direct connected Leigh flexible-shaft grinder which operates at a free speed of 18,000 rpm. High speed shaft embodies an inner liner, and the special type ball-bearing spindle has an integral, key-operated ¼-in. collet which also can be provided with auxiliary insert reducing collets to accommodate ⅛, 3/32 and 3/16-in. arbors.

The grinder motor is a ¼-hp, alternating current-direct current type, provided with end ring for suspension and rubber-footed base for bench use. Variable speed rheostat or line switch is optional.

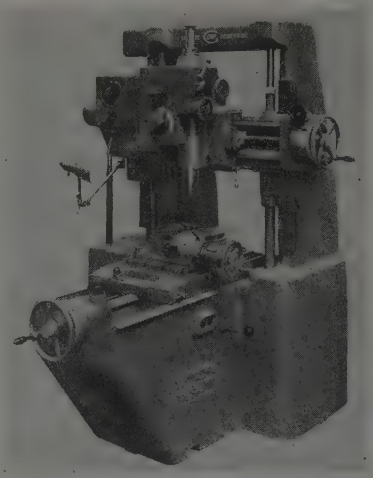
Steel 9/16/46; *Item No.* 9456

Jig Borer

Cosa Corp., 405 Lexington Avenue, New York, representatives in United States for Scciete Genevoise D'Instruments de Physique of Geneva, Switzerland, announce availability of a type 3 K, SIP jig borer, of the planer type, which provides a working surface of 20½ x 15 in. on its table.

There are no loose instruments to be handled for locating hole centers on the machine, and direct readings are made to 0.00005-in. on verniers of large divided drums. Automatic correctors compensate for errors in measuring devices. Guaranteed accuracy for all settings of work table and spindle saddle is within 0.0002-in.

Machine features eight spindle speeds ranging from 75 to 2000 rpm. Six automatic feeds in either direction assure rapid operation on a variety of work. Cross-rail is traversed vertically by a motor driving two elevating screws. Latter extend downward into the bed



and are automatically lubricated by oil baths. Machine also is supplied with a special guiding arm to facilitate machining of very small holes.

Steel 9/16/46; *Item No.* 9584

Threaded Chucks

Westcott Chuck Co., Oneida, N. Y., is manufacturing light-duty threaded chucks which screw directly on the spindle of any of several popular lathes equipped with a 1½-in.-8 threaded spindle nose. Made to center within 0.003-in., chucks are of semisteel and jaws of hardened and ground steel.

Chucks are offered in two styles—style 6900, or universal, and style 5900, or independent. Universal styles are manufactured in 5 and 6 in. sizes. dependent chucks are made in one s 6 in.

Steel 9/16/46; *Item No.* 9455

High Speed Grinder

Compact, high speed grinder ma factured by Wyzenbeek & Staff Inc., West Hubbard street, Chicago 22, may set on a bench, hung from a hook or s pended from operator's belt for comp mobility. Made with motor sizes of 1/12 and 1/18 hp, all have speed 10,000 rpm. Motors are of alternat or direct-current type.

Flexible shafts are oil-proof synth rubber covered and lined with grapl impregnated innerliner, insuring a vib tionless, true-running shaft.

Steel 9/16/46; *Item No.* 9480

Grinder Attachment

A high-speed surface grinder atta ment, the Stafford Blitzrev, is being ma factured by D. & S. Model Co., 3114 East 3rd street, Dayton 3, O. Attachm can be installed on most standard ma of surface grinders and permits opera to use small grinding wheels from ⅛- mounted quills to 3 in. diameter whe

Speeds of 10,000 and 15,000 rpm attainable with the standard 2-step pull A fan mounted on revolving shaft insi housing sets up an airflow outward, p venting entrance of dirt and dust.

A drive pulley is mounted on surfa grinder spindle, replacing the standa 7-in. wheel. Pulley, by means of a b drives spindle of attachment. A do tailed arrangement allows a forward a backward movement of attachment, p mitting grinding over full surface of ma

FOR MORE INFORMATION on the new products and equipment mentioned in this section, fill in this form and return to us. It will receive prompt attention.

Circle numbers below corresponding to those of items in which you are interested:

9545	9452	9534
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9613	9433	9524
9760	9480	9543
9625	9555	9531
9624	9429	9498
	9-16-46	

NAME ..... TITLE .....

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PRODUCTS MADE .....

STREET .....

CITY and ZONE ..... STATE .....

Mail to: STEEL, Engineering Dept.—1213 West Third St., Cleveland 13, Ohio

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on this page.)

20 FOOT BARS— STORED AND HANDLED EFFICIENTLY

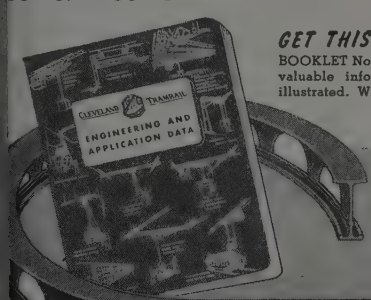
It is not only faster and easier to store and handle stock this way, but safety is greatly improved.

WITH a simple rack arrangement and overhead tramrail crane to serve it, long unwieldy steel ock can be stored in an orderly fashion and grouped cording to shape, size and alloy.

The smooth rolling crane with hand-propelled or ectric hoist makes it easy for a man to handle the rs in and out of the rack and deliver them to the ws or machine tools directly without rehandling.

What a vast improvement this is over the haphazard ne-consuming way of storing and handling stock ll prevalent in so many plants today. There is no gging, lugging and back-breaking lifting while searching for stock needed. The stock is always in its place where it is quickly found. There is no uncertainty as to the amount on hand, because the supply is out in the open where it can always be seen.

Hundreds of metal-working plants and steel warehouses are now enjoying the many advantages that Cleveland Tramrail equipment provides. There are installations of every type from simple hand-propelled carriers and cranes to complete automatic systems that transport materials without need of accompanying operator.



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CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
1125 EAST 283RD ST. WICKLIFFE, OHIO.

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

MEDART MULTICYCLE
PIPE AND TUBE STRAIGHTENING MACHINE

"6 in 1"
SIX POINTS OF SUPERIORITY IN ONE

1. MULTICYCLE STRAIGHTENING—Two bending rolls impose duplex straightening cycles on workpiece insuring end to end straightness.
2. POSITIVE AND SYNCHRONIZED FEED—All four feed rolls are driven insuring positive synchronized feed and torque balanced around neutral axis of workpiece.
3. THE WORKPIECE LEVEL—Maintains one feeding level for all sizes of pipes or tubes—eliminates need of adjustable entry and delivery tables.
4. NO GUIDES—Horizontal position of the six rolls with balanced torque eliminates requirement for guides.
5. SINGLE MOTOR—All four driven rolls powered from a single motor, for synchronization and economy.
6. NO BEVEL GEARS—All gears enclosed in cases and running in oil, for sure trouble free operation.

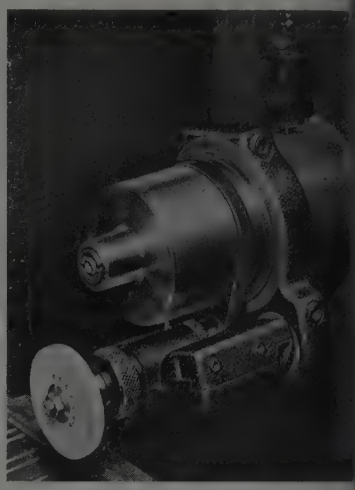
"Patents make Jobs"

MANUFACTURING ENGINEERS OF COMPLETE TRANSMISSION EQUIPMENT AND SPECIALIZED MACHINERY

MEDART

THE MEDART COMPANY • 3500 DEKALB ST., ST. LOUIS, MO.

netic chuck. Attachment also may swung through 360°, allowing grindi



farther to left or right, increasing t capacity.

Steel 9/16/46; *Item No.* 9555

300-Ampere Welder

A development of Hobart Bros. C Troy, O., is a 300-amp gasoline-driv arc welder with a built-in auxilia alternating current generator. An ove size separate exciter supplies excitatio to both welding generator and alterna ing current generator of the welder.

Four combinations of power can b furnished the unit simultaneously, wi the arrangement of connecting statio and panel of generator. Unit is offered i two sizes, 6 and 12 kw.

Steel 9/16/46; *Item No.* 9429

Gas Analyzer

Type TB gas analyzer for continuous recording or indicating concentration one component of mixed gases whos characteristics can be detected by the mal-conductivity principle is announce by General Electric Co., Schenectad N. Y. Instrument can be used over a wid range of gases and gas concentration It will detect impurities in hydroge carbon dioxide, sulphur dioxide, or an one of many organic vapors, provide the impurity has a different therma conductivity from that of the gas bein analyzed.

To adapt analyzer to varied applic tions, a different reference gas can b obtained for each application. A chang of instrument scale and a new cell bloc containing this gas, permits an analyze designed for one atmosphere to be applie to one that is radically different.

Gas analysis is registered on any stand

KEYSTONE ALLOY CHISEL STEEL

A Disston tool steel designed for the tougher metal-cutting jobs

This carefully worked alloy adequately meets each of the requirements of a high quality chisel steel. It has high heat resistance . . . up to 600° F. in the tool. It is exceptionally tough, outperforming most chisel steels regardless of their price. It has high compressive strength, lasts long in hard and steady service. And it is economical.

Because it can stand up under many blows per second, Keystone Alloy Chisel Steel is specially recommended for pneumatic chisels running on air pressures above 100 pounds per square inch at the hammer.

It is also extensively used for making hot punches, shear blades, pipe cutters, welded tube-bending mandrils and similar applications.

And it has proved to be well suited for die blocks having sharp impressions and subject to breakage.

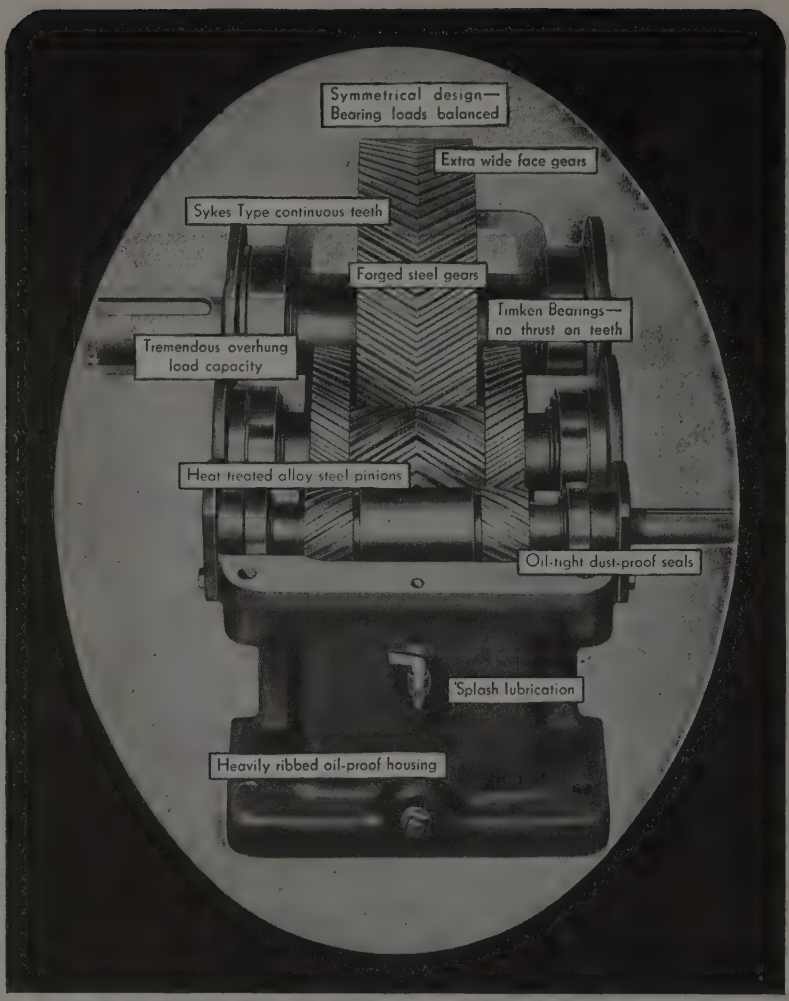
Disston has a number of special steel analyses for chisels used in various types of chipping. Among them you will find one that fully meets your needs. Write to us for recommendations and sample.

ESTABLISHED 1840 REG. U.S. PAT. OFF.

ANALYSIS			
Carbon	.50%	Tungsten	2.00%
Chromium	1.10%	Vanadium	.20%

● *LET DISSTON ENGINEERS HELP SOLVE YOUR TOOL STEEL PROBLEMS*

HENRY DISSTON & SONS, INC., 926 Tacony, Philadelphia 35, Pa., U. S. A.



H & S HERRINGBONE SPEED REDUCERS
have 10 points of superiority

★ The features shown in the above illustration of the double reduction Horsburgh & Scott Herringbone Speed Reducer are found also in the single and triple reduction herringbone units. Extreme accuracy, herringbone tooth design and the locking of gears between oversize Timken roller bearings insure quiet, smooth operation ... maintenance cost is close to the zero point and depreciation is exceedingly low, even under very heavy shock loads and other difficult conditions of service.

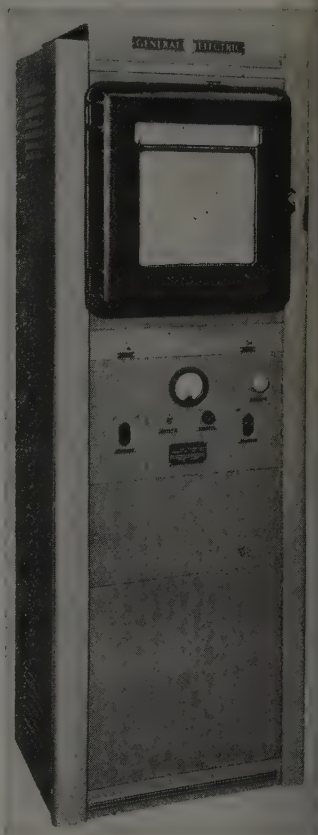
Send note on Company Letterhead for Speed Reducer Catalog 39

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND, OHIO, U. S. A.

ard indicating or recording instrum which can be equipped with contacts closing an alarm circuit when the



centration reaches a preset maximu or minimum value.
Steel 9/16/46; *Item No.* 9554

Punch Presses

Announcement of two power pun presses capacity rated at 12 and 14 tc is made by Diamond Machine Tool C 3429 East Olympic boulevard, Los A geles 23. Inclinable, open-back press feature a 6½-in. opening in back of fra and will incline 40 degrees.

Bed area is 8 x 15 in. and bed openi 5 x 7 in. for both new models. Standa stroke for No. 12 is 1½-in. and 2 i for No. 14. Presses are compact, r quiring only 28 x 28 in. floor space.
Steel 9/16/46; *Item No.* 9566

Oil Flow Regulator

Heavy fuel oil is controlled, integrat and recorded by a unit called the Trar ometer manufactured by Askania Reg lator Co., 1603 South Michigan avenu Chicago. It is a combination piston typ positive displacement meter and a pne matic signal transmitter.

Unit can be used with other liquid particularly viscous fluids because

For Accuracy, High Finish and Great Precision, Use These Tested Sterling Wheels

These Sterling Cylindrical Grinding Wheels produce unsurpassed accuracy and smoothness of the ground surfaces. They readily shape and reduce to required size hard materials that cannot be machined . . . and do it to limits of 0.0001-inch, and better!

Available in any desired grain size and special Sterling bonds, these wheels provide unusual economy and lasting performance. A Sterling engineer will gladly arrange a test in your grinding department, under such conditions as you may specify . . . write us today!

"THE WHEELS OF INDUSTRY"

● May we send you the Sterling folder on Cyclindrical Grinding specifications? Free for the asking.

· STERLING ABRASIVES ·

THE STERLING GRINDING WHEEL DIVISION

OF THE CLEVELAND QUARRIES COMPANY

TIFFIN, OHIO

THE WHEELS OF INDUSTRY

ROUSTABOUT CRANE

brings indoor-factory efficiency and lower costs to your factory yard

You've got a crane, a magnet or a grab-bucket *anywhere you want it* around your yard exactly *when you want it*—when you have a Roustabout. Fast and powerful, this mobile load-hustler gives you low cost materials handling outdoors all around your plant to match your indoor efficiency. It keeps 101 things organized, on the move, prevents costly delays—no waiting for crews from other jobs. Built for years of overwork—ball-bearing boom turntable, all gears in oil. Capacities to 7½ tons—it's the answer to your yard problem. Write for complete facts, now!

● Fast efficient handling of all kinds of loads . . . with hook.

● With grab-bucket . . . Roustabout hustles sand, cinders, etc.

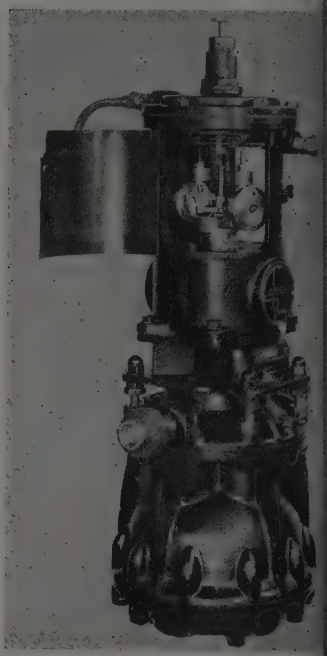
THE HUGHES-KEENAN COMPANY
585 NEWMAN STREET • MANSFIELD, OHIO

ROUSTABOUT CRANE

Roustabout Cranes
By Hughes-Keenan
Load-Handling Specialists Since 1904

accuracy is unaffected by vis changes.

With excess power, even at flows, it is adaptable to applic



where wide flow variations are en tered.

Steel 9/16/46; *Item No.* 9567

Flow Metering Device

Fischer & Porter Co., Hatboro, P producing a small, low capacity rate metering instrument, the Junior meter, for measuring leakage from gas pipe jackets for fire prevention, lation of product flow and purgin

chemical service manometer lines. M from carbon steel, stainless steel or blocks and held together by a pr steel shroud, device has ¼-in. pipe nections which face directly to the

Metering tubes are 1½-in. long floats are aluminum for gas service stainless steel for liquids. Capacity ra

RUST PREVENTION

How to Eliminate Stains and Rust n Grinding Operations

EFFECTIVE PRODUCT SAFEGUARDS MACHINED PARTS AFTER REMOVING FINGER STAINS

y grinding operation, wet or dry, is a definite tendency for the metal to be stained with the finger prints by handling, after the operation is completed. In wet grinding operations there rong and definite tendency to lus formation of a froth of rust. spheric conditions have fre- caused rusting regardless of nness of the grinding mixture. nbat this difficulty in the manu- ng operations of two St. Louis ns*, we recommended the application of Cities Service Anti-Corrode No. 148.

"This product has proven very successful in removing finger stains as well as providing a suitable protection against rust until the part is shipped or assembled into a complete unit.

"A very desirable feature of Cities Service Anti-Corrode No. 148 is that it does not form a thick film which would make further handling disagreeable, and it is of such low viscosity that the user has only slight 'dragout' losses and his 'drippings' are negligible.

tion er's

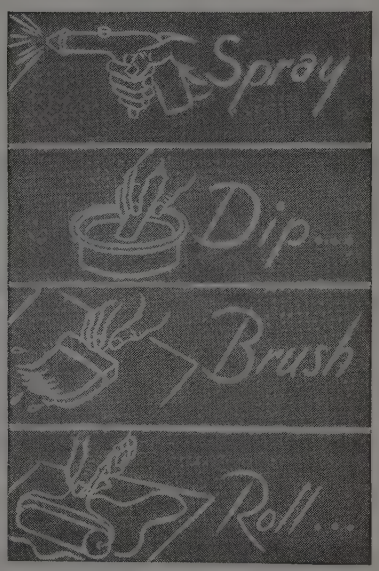
Slight "Dragout" Losses

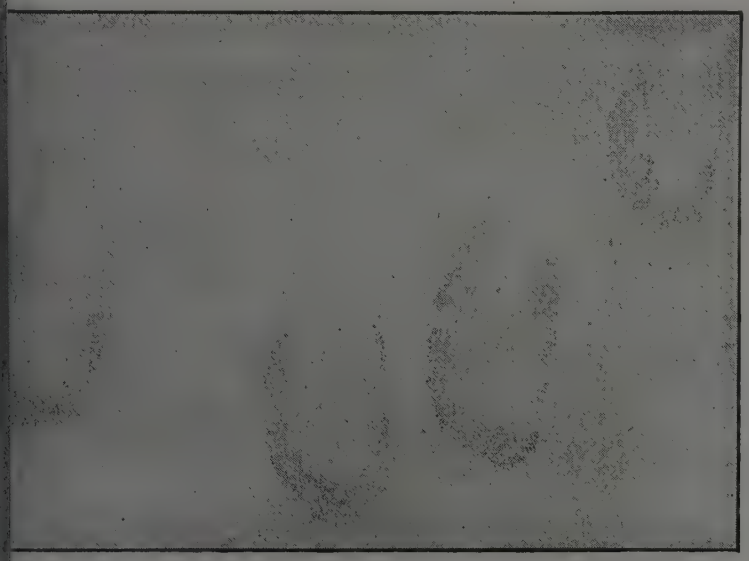
"These two concerns have been satisfied to such an extent that we now supply them with practically 100% of their oil requirements."

Cities Service Lubrication Engineering service is available without cost or obligation for any rust or lubrication problem. Call your nearest Cities Service branch office, (Arkansas Fuel Oil Co. in the South), or write to Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Engineering Service Available

* Names on Request





unretouched photograph showing the corrosive effect of fingermarks on stainless steel.

CITIES SERVICE OILS
ONCE-ALWAYS

FOR EVERY LUBRICATION PROBLEM CALL Cities Service FIRST!

ANNOUNCEMENT

TO AUTOMOTIVE, REFRIGERATOR, AIR CONDITIONING AND OTHER METAL WORKING INDUSTRIES THAT DEMAND A QUALITY FINISH

THE AMERICAN CHEMICAL PAINT COMPANY *is back in the Rust-Proofing Business . . . TO STAY!*

Since 1914 ACP has pioneered in rust prevention and other metal working chemical problems. DEOXIDINE — the original phosphoric acid metal cleaner and rust removing conditioner has been credited with saving the then infant automobile industry, by making possible a durable paint finish on steel bodies.

Today the manufacturer who demands quality and durability may further improve his product by the use of phosphate bonding coatings to protect both the lustrous paint finish and the metal as well. Many of the most effective and economical phosphate coating processes — so widely used in industry today — were developed in the ACP laboratories. In 1940, however, circumstances forced ACP out of the phosphate coating field.

ACP is now in position to exploit and develop further its patented ACP COLD SPRAY-GRANODINE (peroxide-zinc phosphate) coating process. Already many of our former customers have readopted it, and more are planning to change in the near future to get the savings of this low temperature process that produces a hard zinc phosphate bonding coating on which the highest paint luster can be obtained. It protects the lustrous beauty of the paint finish — and the metal as well. A GRANODIZED product gives assurance of the quality of the paint finish.

Another ACP product—THERMOIL-GRANODINE—is again available to produce wear resistant phosphate coatings on friction bearing surfaces.

Quality products that are "GRANODIZED" with ACP COLD SPRAY-GRANODINE; "DURIDIZED" with ACP DURIDINE 210B; or "CROMODIZED" with ACP CROMODINE are *Certified for Rust Resistance*

AMERICAN CHEMICAL PAINT COMPANY

CHEMICALS ACP PROCESSES

AMBLER, PA.

CHEMICALS ACP PROCESSES

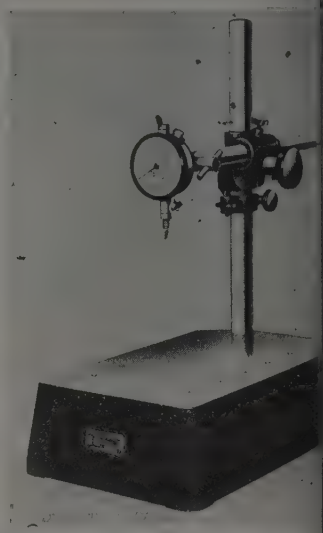
6335 PALMER AVE. E., DETROIT • WALKERVILLE, ONTARIO

for various models for water service from 3.5 cc per minute to 0.90 Air at 70° F, 14.7 psi is metered devices which have ranges accord the model from 50 cc per minute cfm.
Steel 9/16/46; *Item No.* 9594

Comparator Gage

A dial comparator model, designa No. 107, is the latest product of St Gage Co., Poughkeepsie, N. Y. adapted to a variety of uses beca its extensible indicator support arm

By means of a double clamp ar ment, indicator support arm may



up or down on vertical column, sw any angle in either a horizontal or v plane, and moved to place indicator desired distance from column. Set facilitated by a vernier screw. A f washer in swivel prevents indicat from dropping unintentionally clamp is loosened for adjustment.
Steel 9/16/46; *Item No.* 9524

Horizontal Grinder

Master Pneumatic Tool Co. Inc. keting a new line of light weight power horizontal grinders emb

magnesium housings in which inc hard chromium is used on main w parts.

Correct load and free speeds i grinder are controlled by quick push valve governor, regardless of ating air pressure, and which will n away with use. Eight light and

CUSTOM BUILT HIGH CAPACITY INSTALLATION

DSM

ROSS FLOW CIRCULATION
R ACTUAL SURFACE CONTACT

erly applied, DSM designed CROSS FLOW heating ms effects a gentle wiping action on all surfaces—sides ps—bottoms—of your product, to be dried or processed. lting in speedier baking and a more uniform product.

ng from center outwards avoids case hardening

WANT TO BUILD ***YOUR*** *OVENS*

PLANT ENGINEERING: *Consulting assistance in plant layout to coordinate departmental operations, our experience dated from 1917 in this field.*

Such plant layout may be based on increasing production beyond present capacity, or it may be a rearrangement in this post-war period when operations are conducted under a new set of conditions.

MOTOR CLEANING EQUIPMENT: *Washing machines for cleaning teardowns. Kerosene spray or similar solvent usually used as the cleaning medium.*

FORMED COWLINGS, PANELS, ETC.: *To your specifications, and of light metal alloys as required. Weldments and brazed assemblies may be under controlled atmosphere.*

PILOT EQUIPMENT: *Sample size equipment for development of heavy equipment.*

VERTICAL CORE BAKING OVENS • CONTINUOUS HORIZONTAL BAKING OVENS • BATCH TYPE CABINET OVENS • DRAWER OVENS

DETROIT SHEET METAL WORKS
1296 OAKMAN BOULEVARD, DETROIT 6, MICHIGAN

METAL FINISHING EQUIPMENT *by*

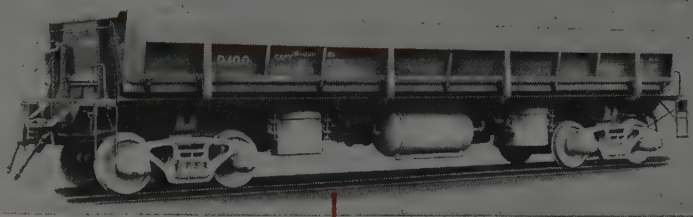
DETROIT SHEET METAL WORKS

1296 Oakman Boulevard DETROIT -6- MICHIGAN

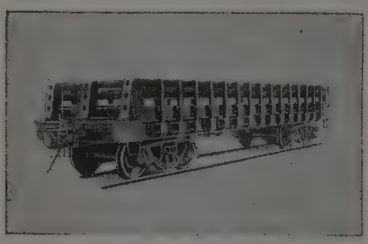
PAINT SPRAY HEATING, VENTILATING, COOLING DRYING, HUMIDIFYING SYSTEMS, JAPANNING AND INDUSTRIAL OVENS INDUSTRIAL WASHING MACHINES

From Raw Material Handling to Finished Steel Shipments . . .

Specify Steelcar

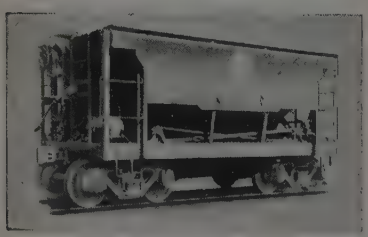


Pressed Steel Car engineering is ever progressive. Always in the forefront by initiating new designs, using new light metals and stressing the importance of improved car construction to provide greater strength, safety, durability, better transportation and lower haulage costs.

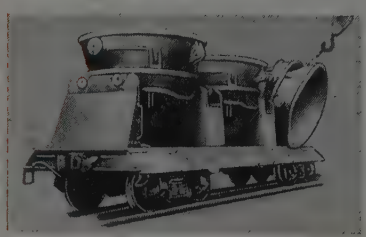


140,000 lb. Capacity Hot Bloom Car

140,000 lb. Capacity Open Hearth Pit Scrap Car



70 Ton Capacity Hopper Discharge Ore Car



Riveted and Welded Cinder Pot Cars

PRESSED STEEL CAR COMPANY, INC.

PITTSBURGH 19, PA.

NEW YORK . . . . CHICAGO . . . . ST. LOUIS . . . . ST. PAUL

duty models are being manufactur wheels of 4 to 8 in. in diameter. *Steel* 9/16/46; *Item No.* 9543

Accumulating Table

Rotary accumulating table whic vides a reserve reservoir to temp handle excess containers or wh might be on the conveyor when the of the conveyor is greater than the o ing equipment is latest product of Equipment Corp., 101 Park avenue, York 17. It consists of a unit with a s

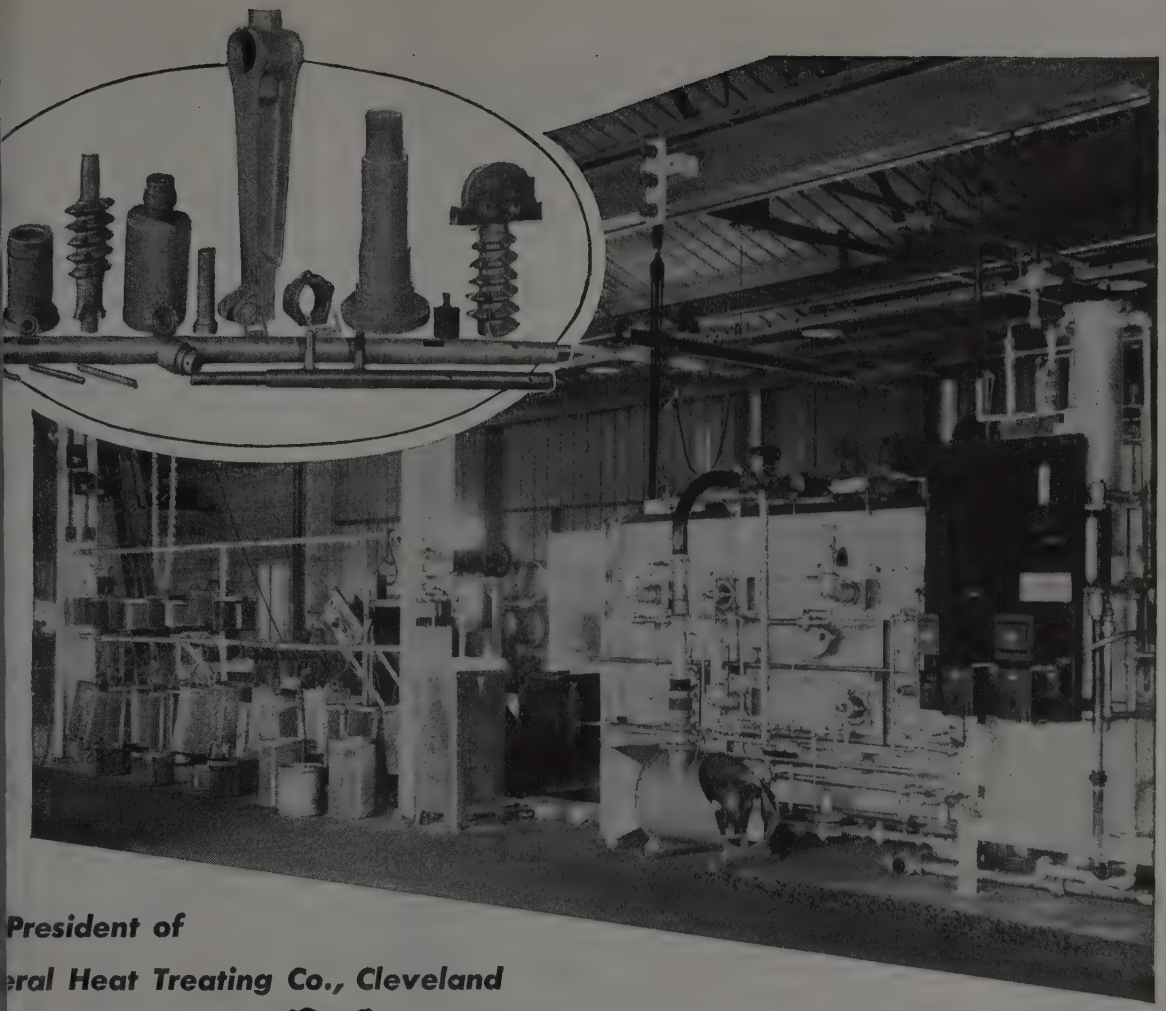
base and round flat steel top on whic volves a disk on which the materials ing conveyed rest.

Disk is motor driven auomatically any desired speed in order to synchr perfectly with the speed of conv Around the outer edge of the disk t a guard plate which prevents the con of the disk from falling off. *Steel* 9/16/46; *Item No.* 9551

Micrometer Valves

Microl valves which use a basi new principle to obtain precise continuous control of flow of either liq or gases are latest developments of St ard Instruments Co., South Boston Mass. Flow control in each valv provided by moving adjustable plu which varies length of capillary pas continuously from 4 to 600 in.

Flow of air and other gases may varied over range of 0.2 to 60 cu in. minute with a pressure drop across valve of 15 psi, flow of water and o light liquids can be varied from cc to 10 cc per minute. *Steel* 9/ *Item No.* 9498



President of

eral Heat Treating Co., Cleveland

says

GAS "does a better job"

in his 26 heat treating furnaces

seph Sindelar, President of the busy and pro- e General Heat Treating Company of Cleveland, as and Gas equipment do a better job in meeting acting specifications required by his customers. nner of metal parts including high speed steel, roaches, tool steels, springs, bolts and engine ass through the Company's 26 Gas furnaces for a ariety of heat processing.

Sindelar believes that Gas furnaces enable him to t work of the highest quality. He finds Gas fuel , most accurately controllable for precise tem- es and finds Gas is unsurpassed for flexibility—an important factor in custom heat treating—where wide variation in size, type of product and heat treatment necessary, is encountered.

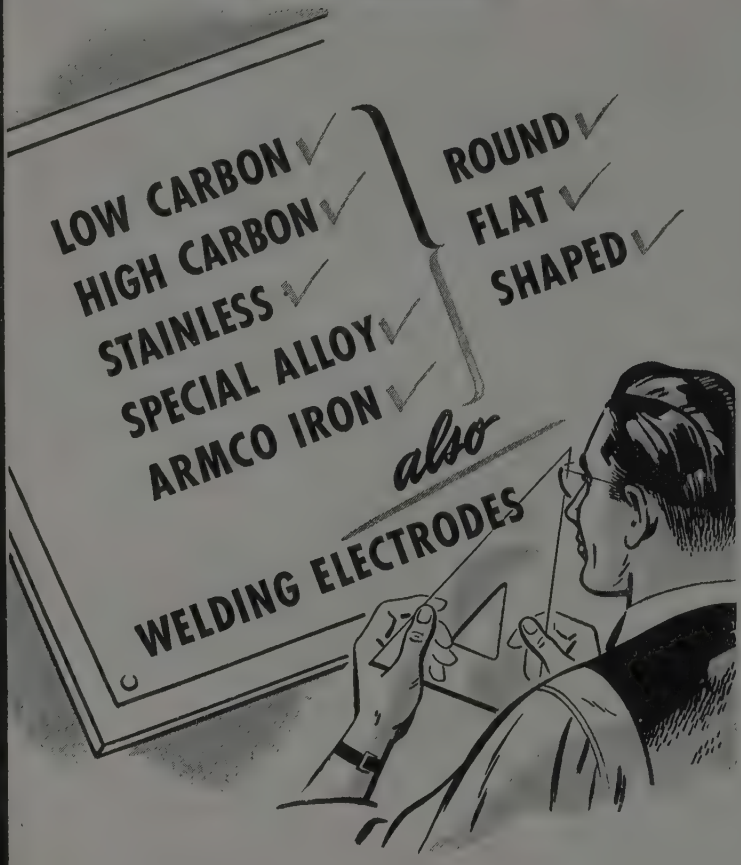
Whether you operate an independent heat treating establishment or whether heat treating is an integral operation in your production line, Gas is your recommended fuel for securing any desired characteristic in metals—and for doing it faster and more economically. The Industrial Engineer of your local Gas Company will gladly help you achieve these objectives.

American Gas Association

420 Lexington Avenue, New York 17, N.Y.

PAGE *for* WIRE

—HAVE IT YOUR WAY



Wire for production—that has been a Page specialty for many years. If you know what you want, Page probably has it or can make it for you. If you are not sure, Page will make a recommendation. For wire or information about the best use of wire, get in touch with Page.

ACCO Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

Heat Treating Aluminum

(*Continued from Page* 106

normal atmosphere. Radiant tu naces, employing oil or gas, ca be employed when a normal atm is desired. For applications whe products of combustion are acce gas or oil-fired forced air circulati naces are usually more economic

It is advantageous to have the q ing tank immediately under the chambers to facilitate the quenchi eration when using an air furnac

Salt Bath Furnaces: There are salt mixtures in commercial use, r from commercial fertilizer to a r of equal parts of sodium and pot nitrates. A popular mixture cons 90 per cent sodium nitrate and cent sodium nitrite, the nitrite a lowering the melting point of the r several degrees. All salt mixtures be inhibited with a small amount chromate.

Salt baths may be heated by gas or electricity, the more c fuels being gas and oil. With these the control of the heat input c closely and quickly controlled. Sinc is danger of fire, proper selection is of prime importance. Operat salt baths is rather critical so the i tions furnished by the manuf should be strictly followed. If the i tion of a salt bath is contempla is suggested that full details be ob from major furnace manufacturers.

Cold water quenching tanks be so located that the load can be ferred from the furnace into the wat a minimum of elapsed time. The mum lapse of time for the dur alloys should not be greater than Two tanks must be used to remo salt from the material.

Temperature Control: Good te ture control is a necessity to produc sistently superior quality meterial. ance ranges should be ±5° F fo cipitation heat treatment, ±10° fo tion heat treatment, ±12.5 to 1 annealing. Sufficient pyrometric ment should be employed to insu herence to the temperature require set forth in Tables I and II.

Both the minimum and maximun perature must be controlled. T couples should be located in the at both the hot and cold spots. spots can be determined by furnac perature or load temperature survey the furnace loaded in a normal m The thermal head of the heating m must be kept sufficiently low t vent localized overheating. Maximu missible head should be determin survey.

Attention is called to the fact

ntial portion of the difficulties en-
red in heat treating aluminum al-
s due to improper or inadequate
rature control. This fact is well
remembering. When any difficul-
rise, it should be the first point
d.

In the August 26 issue, Fig.
79, that portion of curve appearing
equilibrium diagram from 1214.6°
5 per cent copper at 1918° F was
ed as "curve." It should read
B."

el Assembly Fixture

(*Concluded from Page* 120)

laces one of the plastic caps over
ad of the plug M, locating it with
jections N and with the hole in
facing upward.

next brings the lever P upward
is raises the pusher Q against the
rcing it back to the face of the
. This action brings the push
the keyway against the stop
d pushes the nut out into the
slot in the plastic cap.

operator next feeds down the
driver guide slide with the ma-
nd before the screw driver comes
hole in the plastic cap he places
the screws in the chute K which
the screw into the hole in the
he screw driver is then fed down
is screw and the nut and screw
sembled.

emove the part, the handle of the
is pushed down and the pusher
rns to the lower position; the
at the rear of the locating plug
ut the plug and assembled plastic
ich can then be removed. The
is giving good service and has
is operation a quick and low cost
ion job.

n-Hearth Program Deals Shop Problems

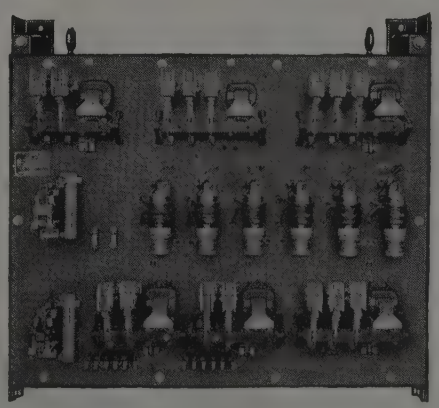
rience of three companies to date
asic end and roof construction
related at the joint meeting of
hern Ohio Section of the National
Hearth Committee, and the Ohio
Section of A.I.M.E., to be held at
ler-Wallick Hotel, Columbus, O.,
-26.

Hamilton Long will speak on
America Permit Peace?" at the
nner meeting Friday evening.
sitations are scheduled for Satur-
rning and the Ohio State-Minne-
tball game for the afternoon.
FonDersmith, superintendent of
oduction, American Rolling Mill
Middletown, O., is chairman of the
Ohio Section of the National
Hearth Committee.

Modern

Push Button Control for Floor Operated Cranes A-C OR D-C

Form FCR Controller for trolley or bridge motion—for direct current floor-operated cranes.



15 HP Form FCHR-2 hoist controller—for a.c. floor-operated crane.

This EC&M standardized line of controllers is designed for (1) accurate inching, (2) compact mounting, and (3) minimum collector-bar requirements. They can be conveniently installed along the crane girders or mounted on the trolley, as required.

They have all the advantages of the well-known EC&M Control for *cab-operated* cranes. Contactors are of the heavy-duty, magnetic type. Resistors are carefully proportioned for low-torque hoisting of light loads and for smooth acceleration of bridge or trolley. All motions can be controlled from a single, pendant, master-station with two Push Buttons for each. Individual rope-operated Master Switches are optional.

Send for Bulletins 922 (D.C.) and 931 (A.C.) which illustrate and completely describe these units.

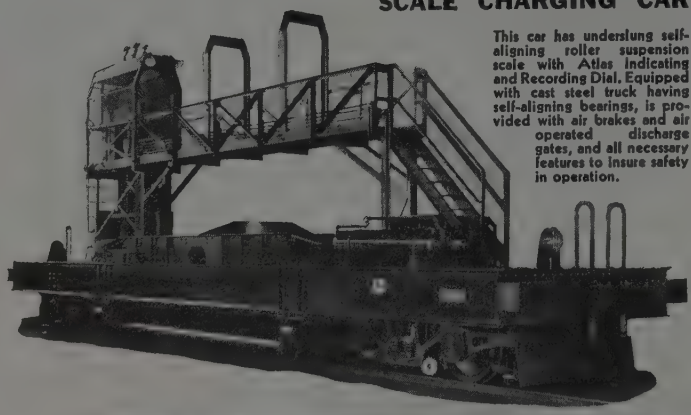
THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79th STREET • CLEVELAND 4, OHIO

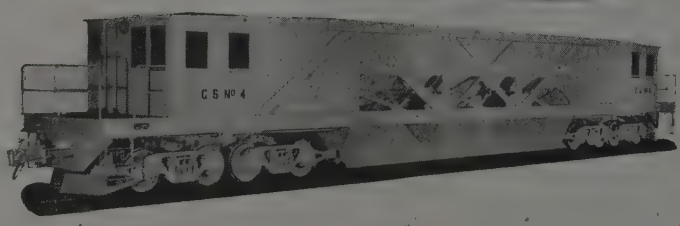
ATLAS

ORE TRANSFERS AND SCALE CHARGING CARS

30 TON CAPACITY DOUBLE HOPPER SCALE CHARGING CAR

This car has underslung self-aligning roller suspension scale with Atlas indicating and Recording Dial. Equipped with cast steel truck having self-aligning bearings, is provided with air brakes and air operated discharge gates, and all necessary features to insure safety in operation.





120-TON SIDE DUMP ORE TRANSFER CAR

Used for stocking and reclaiming. Hopper has three compartments each with independently operated discharge gates. Double end control so that operator is always in the front end of the car. Car is powered by four 125 Horsepower Motors with series parallel reversing-plugging type, full magnetic control. Hoppers are provided with electric heaters to prevent freezing of load in severe weather.

Builders of:

DIESEL ELECTRIC AND STORAGE BATTERY LOCOMOTIVES FOR INTERPLANT HAULAGE

SCALE CHARGING CARS AND ORE TRANSFERS FOR BLAST FURNACE STEEL PLANTS

COAL CHARGING CARS, CLAY CARRIERS DOOR EXTRACTORS, COKE GUIDES AND COKE QUENCHING CARS FOR BY PRODUCT COKE PLANTS

TURNTABLES

INDICATING AND RECORDING DIALS FOR WEIGHING SCALES

The ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1100 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

Testing Forgings

(*Concluded from Page 9*

ring is taken from the testing cleaned. At this time a very carel examination of the rough machi ing is made and it is sometimes to reject the forging because o cracks even though the other c yield strength and elastic limit h satisfactory. The pressure test the test bar data do not always a occasionally a forging with good on the test bar is rejected bec pressure test shows unsatisfactor

After the pressure test the c forgings are finish machined to the rotor coil retaining rings. A final machining the forging surf again given careful inspection as check before assembly on the rot

It has been found very desi overload machine parts beyond t they will be subjected to in servic the final machining on the par the designer then knows that i the part will not expand and ch shape or will fail by being over In particular, on designs where thousandths of an inch expansio throw the parts out of adjustme stressing is very important. On where calculated stress are high, t on the properties is essential.

While the method presented he use of one particular shape, the thi cylinder, the principle brought ou applied in innumerable cases.

While we have referred to thes ders as thin walled they could be as thick walled from a stress cal standpoint since the thickness of t der is more than one tenth of th of the cylinder. The formula only applicable when the wall t is more than about one-tenth of th

Crimped Wire Connect Withstands Vibration

Installation tools and terminals taching solderless connections to stranded wire of sizes 22 to 10 ha developed by Aircraft-Marine Inc., Harrisburg, Pa. The mechani nection made by the crimping o will withstand vibration and t twist, the company states.

The crimp for solid wire is su no air space exists inside the said to make full surface area with the conductor. Terminals this application are electro-tinned gives maximum electrical condu

Terminals have short barrel an crimped do not spread. Shape solid conductor in a central pos terminal barrel, according to th pany.

re's one place radiography re than pays its way . . .

IN FOUNDRY OPERATIONS: no need to spend a lot of time and money testing the practicality of new casting designs . . . the soundness and safety of proposed weight reduction . . . the correctness of foundry technics. With radiography you can quickly correct unsound practices . . . save enough thereby to more than pay for the radiographs used.

s another . .

IN MACHINING: it's big money lost when parts with internal defects aren't discovered until after machining starts. Using x-ray, you can screen out all but an irreducible minimum of such faulty castings *before* machining . . . never miss what you pay out for x-rays because of what you get back in time and labor savings.

another . .

IN WELDING: altogether too many castings are scrapped because of defects that skillful welding would repair. With radiographic guidance for your welders, you can make sound weld repairs that can be depended upon. This will enable you to minimize rejections . . . effect savings in material costs that will make your radiography outlay look insignificant.

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The Business Trend

Production Recovering From Holiday Decline

RECOVERY from its slackened pace of the Labor Day week is being made by industrial production, which, as a result of the holiday, fell in the week ended Sept. 7 to the lowest point since two months ago.

Reflecting the holiday influence, STEEL's industrial production index for the week ended Sept. 7 dropped to 137 per cent (preliminary), compared with 149 per cent in the previous week. The 137 per cent level is the lowest since the 126 per cent recorded in the Fourth of July holiday week. Highest postwar pace had been set in the weeks ended Aug. 17 and 24 when the index was 152 per cent.

AUTOS—Helping industrial production as a whole to return to its pre-Labor Day tempo is automobile production, which in the week ended Sept. 15 was expected to attain a new postwar high of approximately 95,000 passenger cars and trucks. The postwar high had been 91,360 assembled in the week ended Aug. 24. During the Labor Day week, auto output dropped to 76,106.

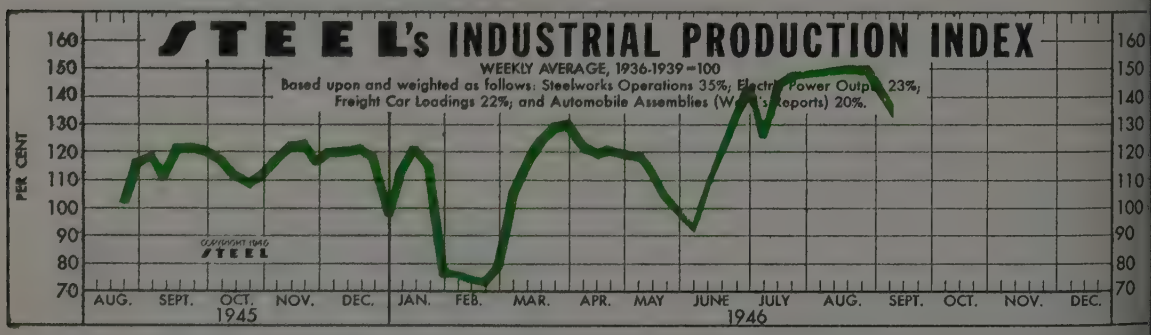
STEEL—Also giving strength currently to the recovery of industrial production is steel ingot output. It had fallen during the week ended Sept. 7 because of the Labor Day holiday and the scrap shortage. However, the latter still plagues the industry in its efforts to maintain a high rate of production.

CARLOADINGS—Railroad carloadings which decl during the Labor Day week probably will not rebc upward as sharply as they would had the American I eration of Labor merchant seamen's strike not brough an embargo of rail shipments to seaports. Also affec carloadings was the truck drivers' strike which was alyzing commerce and industry in New York city.

STOCKS—Wall Street is still seeking a satisfactory planation as to why the stock market has been hit a selling wave which has knocked the Dow-Jones in trial stock average down approximately 20 per from the 1946 high mark registered at the end of M While some observers attribute the break to labor rest, price control, and foreign affairs, other market alysts believe the decline stems from the saturation investment and speculative buying power.

PRICES—First decline since the week ended July was registered during the week ended Aug. 31 in the U Bureau of Labor Statistics wholesale price index. La level of the index is 128.2 per cent of the 1926 ave of 100. This is a decline of 0.2 of a point from week ended Aug. 24 and is a result principally of a sl decrease in average prices of farm products.

COAL—Production of bituminous coal continued a high rate during the week ended Aug. 31, when put was estimated at 12,500,000 tons, and helped ther to reduce the deficit incurred during the mir strike early this year. Output this year through Aug had come within 53,374,000 tons, or 13.5 per cent production for the corresponding period in 1945.



The Index (see chart above): Latest Week (preliminary) 137 Previous Week 149 Month Ago

FIGURES THIS WEEK

INDUSTRY

	Latest Period*	Prior Week	Month Ago	
Steel Ingot Output (per cent of capacity)§	85.5	90	89	
Electric Power Distributed (million kilowatt hours)	4,184	4,404	4,412	3.
Bituminous Coal Production (daily av.—1000 tons)	2,083	2,036	2,042	2.
Petroleum Production (daily av.—1000 bbls.)	4,800	4,833	4,821	4.
Construction Volume (ENR—Unit $1,000,000)	$86.1	$79.9	$119.6	$
Automobile and Truck Output (Ward's—number units)	76,106	74,960	77,823	14.

*Dates on request. §1946 weekly capacity is 1,762,381 net tons. 1945 weekly capacity was 1,831,636 net tons.

TRADE

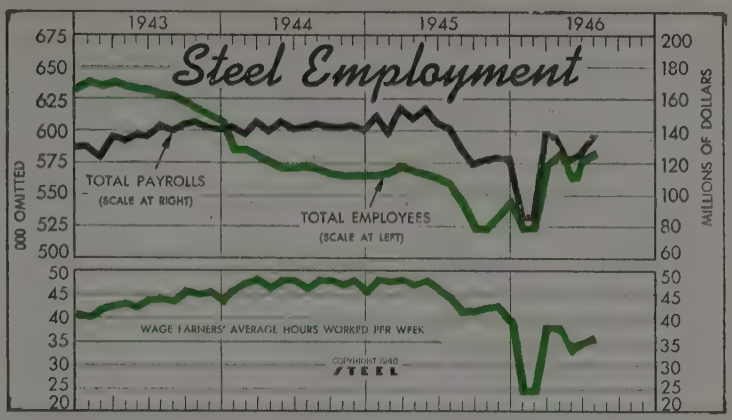
Freight Carloadings (unit—1000 cars)	725†	908	899	
Business Failures (Dun & Bradstreet, number)	14	28	27	
Money in Circulation (in millions of dollars)‡	$28,506	$28,376	$28,326	$27,
Department Store Sales (change from like wk. a yr. ago)‡	+45%	+40%	+30%	

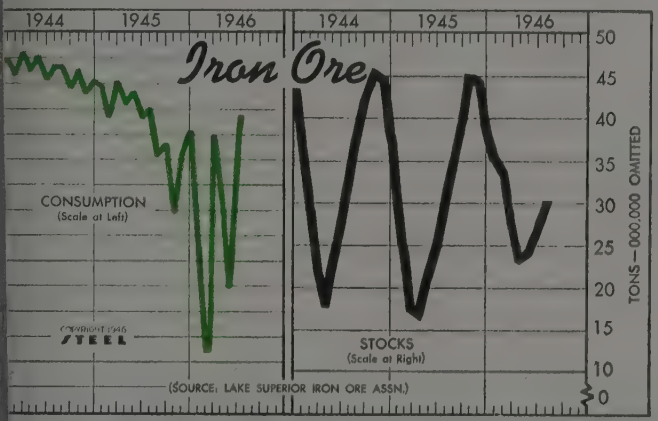
†Preliminary. ‡Federal Reserve Board.

Steel Employment

—Employees†— (000 omitted)			—Total Payrolls— (Unit—$1,000,000)		
1946	1945	1944†	1946	1945	1944
522	564	583	$84.9	$150.3	$141.8
522	566	583	84.9	138.4	137.6
570	570	578	138.8	155.0	145.3
582	567	573	134.3	147.0	138.9
563	565	569	121.4	154.0	145.4
578	562	570	125.6	144.1	140.5
585	557	571	138.0	141.0	141.8
...	543	569	....	128.1	143.9
...	521	565	....	119.1	142.2
...	522	564	....	121.3	141.7
...	533	564	....	122.8	143.1
...	545	564	....	122.5	139.9

hly average. *Figures for January uary, 1946, are merely averages de- m a report that combined those two cted months.





Iron Ore

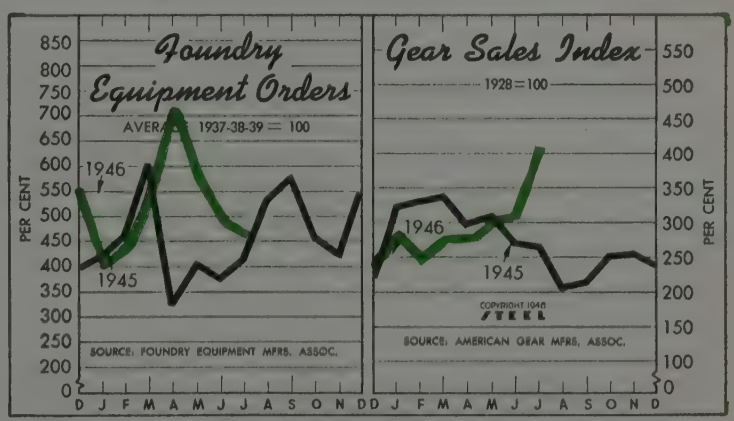
(Lake Superior Iron Ore Assn.)

Gross tons—000 omitted

	Consumption		Stocks at Lake Erie Docks and furnaces	
	1946	1945	1946	1945
Jan.	8,719	6,983	35,342	30,889
Feb.	1,748	6,371	33,647	21,577
Mar.	6,021	7,082	27,601	17,304
Apr.	4,769	6,642	23,079	16,429
May	2,990	6,872	23,905	20,715
June	4,995	6,397	26,265	24,847
July	6,423	6,532	30,439	29,485
Aug.	....	5,658	.....	34,781
Sept.	....	5,837	.....	39,549
Oct.	....	4,491	.....	45,090
Nov.	....	5,611	.....	44,706
Dec.	....	6,099	.....	39,059
Total	....	74,576	.....	....

Foundry Equipment Orders and Gear Sales

Foundry Equipment Orders —Index— (1937-38-39=100)			Gear Sales —Index— (1928=100)		
1946	1945	1944	1946	1945	1944
492.8	422.4	378.3	269	323	246
532.8	465.3	456.8	253	331	214
536.6	604.7	498.4	275	339	485
501.2	325.0	385.7	284	296	308
477.3	404.7	503.9	313	309	305
491.7	375.4	466.1	321	271	328
553.4	411.7	375.8	407	264	242
...	532.2	450.5	...	205	247
...	577.2	388.0	...	213	248
...	457.8	526.5	...	251	293
...	416.6	369.5	...	255	209
...	547.6	397.4	...	239	219
...	461.7	433.1	...	275	279



CE	Latest Period*	Prior Week	Month Ago	Year Ago
Clearings (Dun & Bradstreet—millions)	$10,053	$11,074	$11,701	$8,177
al Gross Debt (billions)	$266.0	$267.8	$267.5	$268.2
Volume, NYSE (millions)	$28.1	$20.7	$15.6	$30.6
Sales, NYSE (thousands)	10,559	6,875	4,102	5,141
and Investments (billions)†	$60.0	$60.0	$60.7	$62.3
l States Gov't. Obligations Held (millions)†	$41,463	$41,571	$42,296	$46,371

ember banks, Federal Reserve System.

L's composite finished steel price average	$64.45	$64.45	$64.45	$58.27
ommodities†	128.2	128.4	123.0	105.2
rial Raw Materials†	142.6	144.9	140.6	115.8
factured Products†	124.3	123.6	120.6	102.1

Bureau of Labor Statistics Index, 1926 = 100.

Only Macwhyte ATLAS Braided Slings give you this OPPOSITE LAY construction

You get the plus of exceptional flexibility and extreme kink resistance when you use Macwhyte ATLAS Slings.

This is due to the braiding method used. All left-lay ropes are braided to the right, and right-lay ropes are braided to the left. Thus, the ropes counterbalance each other and keep ATLAS Slings easily manageable at all times. All ropes follow a continuous spiral path throughout the entire body length to provide maximum reserve strength and safety. (There is a total of 8 wire ropes in the sling body.)

Macwhyte's complete line of wire rope slings is designed for easy, economical handling of your materials. Make Macwhyte your headquarters for wire rope slings.

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Manufacturers of the CORRECT wire rope for your equipment

Braided Slings
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MACWHYTE COMPANY 50th Year 1896 – 1946

These two ropes are left lay, but in the sling they are braided to the right.
These two ropes are right lay, but in the sling they are braided to the left.
This unique ATLAS construction makes possible an extremely flexible and kink-resistant sling that is exceptionally easy to handle.

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'A-CPA Action on Scrap ls To Solve Problem

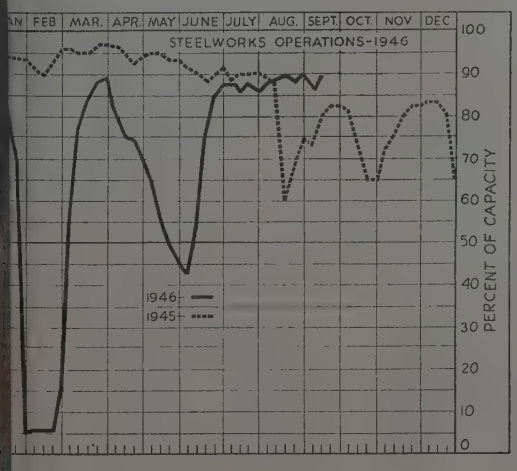
Denial of general price increase is distinctly disappointing to scrap dealers and steel producers. Inventory controls held meaningless

NT action of the Office of Price Administration and n Production Administration last week denying a price increase in scrap and establishing new in-, trading and consumption restrictions failed dis- in the opinion of a majority of scrap sellers and lers, to solve the supply problem. Decision to hold except on cast grades, for at least six months at levels is not expected to stimulate shipments and, leaves most furnaces in a precarious position so far vital raw material is concerned.

e is considerable apprehension as to how long steel roduction can be maintained at the present high ithout a substantial increase in scrap supplies. Unt production level is maintained, finishing mills can- e to make any appreciable headway in reducing eavy order backlogs for all types of products.

his action, prices on all grades, except cast, were changed at levels established as being "fair and le" in April, 1941, more than five years ago. With estion of prices presumably settled for at least six , there may be a temporary loosening up of scrap e quarters, but this is expected to be short-lived. f the new restrictions may bring better order to ading as may be done and eliminate upgrading in nt instances, but on the other hand inventory con- pear meaningless to many in the trade under the ns which now exist and are likely to continue for derable time.

will price increases in cast scrap mean much to l mills, although they may relieve a little of the on pig iron, with some foundry iron production



DISTRICT STEEL RATES

(Percentage of Ingot Capacity Engaged in Leading Districts)

	Week Ended Sept. 14	Change	Same Week 1945	Same Week 1944
Pittsburgh	97.5	— 0.5	73.5	88.5
Chicago	90	+15.5	83.5	100
Eastern Pa.	80	None	75	95
Youngstown	89	None	85	88
Wheeling	93.5	+12	95	96
Cleveland	88	None	83	93
Buffalo	90.5	None	81.5	90.5
Birmingham	99	None	95	95
New England	86	+ 2	78	92
Cincinnati	83	None	76	87
St. Louis	70	+ 7	68	87
Detroit	86	— 5	89	89
Estimated national rate	89.5	+ 4	80.5	96

Based on weekly steelmaking capacity of 1,762,381 net tons for 1946; 1,831,636 tons for 1945; 1,791,287 tons for 1944.

being diverted to basic, but even that is problematical at the moment. In view of the extreme shortage of cast scrap, there is question if the announced advances will have extended effect on the movement of this material to foundries.

Finished steel product producers have commitments on their books well in excess of their ability to fill under present conditions and were, therefore, deeply concerned that the government did not take action which would assure maintenance of steel production at current levels. With rated orders still pouring in, sheet and strip producers are falling farther behind in meeting 1946 demands. So pressing are the requirements for the housing program in particular, some sheet mills have nothing to offer to their regular customers for the final quarter, except that which can be applied against ratings. A number of producers not already in that position fear they will be before long. All of which means that the carryover into next year may be even greater than previously contemplated.

The position in bars, shapes and plates is not much better, despite the fact that ratings are a lesser factor. Producers of these items all have commitments on their books well in excess of their ability to produce.

A new postwar production record was established by the steel industry last month at 6,895,465 net tons compared with 6,609,668 tons in July, the previous high, and 5,735,317 in August, 1945. American Iron & Steel Institute reported operations at 88.3 per cent of capacity compared with 84.9 per cent in July and 70.7 per cent in August of last year.

Steel production increased four points last week to 89½ per cent of capacity. Advances were recorded as follows: 15½ points to 90 per cent at Chicago, 12 points to 93½ per cent at Wheeling, 7 points to 70 per cent at St. Louis, and 2 points to 86 per cent in New England. The rate dropped 5 points to 86 per cent at Detroit, ½ point to 97½ per cent at Pittsburgh and held unchanged elsewhere.

COMPOSITE MARKET AVERAGES

	Sept. 14	Sept. 7	Aug. 31	One Month Ago Aug., 1946	Three Months Ago June, 1946	One Year Ago Sept., 1945	Ye Sep
Finished Steel	$64.45	$64.45	$64.45	$64.45	$64.09	$58.27	$
Semifinished Steel	40.60	40.60	40.60	40.60	40.60	37.80	
Steelmaking Pig Iron	27.50	27.50	27.50	27.50	27.50	24.00	
Steelmaking Scrap	19.17	19.17	19.17	19.17	19.17	19.17	

Finished Steel Composite:—Average of industry-wide prices on sheets, strips, bars, plates, shapes, wire, nails, tin plate, standard and l
Semifinished Steel Composite:—Average of industry-wide prices on billets, slabs, sheet bars, skelp and wire rods. Steelmaking Pig Iron Com
Average of basic pig iron prices at Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Neville Island, Granite City and Youngstown. Steelwor
Composite:—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania. Finished steel, net tons; others, gr

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished material (except tin plate) and wire rods, cents per lb; coke, dollars per net ton; others, dollars per gross ton.

Finished Material

	Sept. 14, 1946	Aug., 1946	June, 1946	Sept., 1945
Steel bars, Pittsburgh	2.50c	2.50c	2.50c	2.25c
Steel bars, Philadelphia	2.86	2.86	2.82	2.57
Steel bars, Chicago	2.50	2.50	2.50	2.25
Shapes, Pittsburgh	2.35	2.35	2.35	2.10
Shapes, Philadelphia	2.48	2.48	2.465	2.215
Shapes, Chicago	2.35	2.35	2.35	2.10
Plates, Pittsburgh	2.50	2.50	2.50	2.25
Plates, Philadelphia	2.558	2.558	2.55	2.30
Plates, Chicago	2.50	2.50	2.50	2.25
Sheets, hot rolled, Pittsburgh	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Pittsburgh	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Pittsburgh	4.05	4.05	4.05	3.70
Sheets, hot-rolled, Gary	2.425	2.425	2.425	2.20
Sheets, cold-rolled, Gary	3.275	3.275	3.275	3.05
Sheets, No. 24 galv., Gary	4.05	4.05	4.05	3.70
Hot-rolled strip, over 6 to 12-in., Pitts.	2.35	2.35	2.35	2.10
Cold-rolled strip, Pittsburgh	3.05	3.05	3.05	2.80
Bright basic, bess. wire, Pittsburgh	3.05	3.05	3.05	2.75
Wire nails, Pittsburgh	3.75	3.55	3.25	2.90
Tin plate, per base box, Pittsburgh	$5.25	$5.25	$5.25	$5.00

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$38.00	$38.00	$38.00	$36.00
Slabs, Pittsburgh, Chicago	39.00	39.00	39.00	36.00
Rerolling billets, Pittsburgh	39.00	39.00	39.00	36.00
Wire rods, No. 5 to ⅜-inch, Pitts.	2.30c	2.30c	2.30c	2.15c

Pig Iron

	Sept. 14, 1946	Aug., 1946	*June, 1946
Bessemer del. Pittsburgh	$29.77	$29.77	$27.69
Basic, Valley	28.00	28.00	26.00
Basic, eastern del. Philadelphia	29.93	29.93	27.84
No. 2 fdry., del. Pgh. N. & S. sides	29.27	29.27	27.19
No. 2 foundry, Chicago	28.50	28.50	26.50
Southern No. 2, Birmingham	24.88	24.88	22.88
Southern No. 2, del. Cincinnati	28.94	28.94	26.94
No. 2 fdry., del. Philadelphia	30.43	30.43	28.34
Malleable, Valley	28.50	28.50	26.50
Malleable, Chicago	28.50	28.50	26.50
Charcoal, low phos., fob Lyles, Tenn.	33.00	33.00	33.00
Gray forge, del. McKees Rocks, Pa.	28.61	28.61	28.55
Ferromanganese, fob cars, Pittsburgh	140.00	140.00	140.00

Scrap

Heavy melting steel, No. 1, Pittsburgh	$20.00	$20.00	$20.00
Heavy melt, steel, No. 2, E. Pa.	18.75	18.75	18.75
Heavy melting steel, Chicago	18.75	18.75	18.75
Rails for rolling, Chicago	22.25	22.25	22.25
No. 1 cast, Chicago	25.00	20.00	20.00

Coke

Connellsville, furnace ovens	$8.75	$8.75	$8.75
Connellsville, foundry ovens	9.50	9.50	9 50
Chicago, by-product fdry., del.	15.10	15.10	13.75

* $2 higher on bessemer, basic, foundry and malleable on adjustable pricing contracts.

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Finished steel quoted in cents per pound and semifinished in dollars per gross ton, except as otherwise noted. Delivered prices do not include t
cent federal tax on freight. Pricing on rails was changed to net ton basis as of Feb. 15, 1946.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, $33, fob mill; forging, quality, $38, Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown.

Alloy Steel Ingots: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, Coatesville, uncrop, $48.69.

Rerolling, Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $39; Detroit, del., $41; Duluth (billets), $41; Pac. ports (billets), $51. (Andrews Steel Co., carbon slabs, $41; Northwestern Steel & Wire Co., $41, Sterling, Ill.; Granite City Steel Co., $47.50 gross ton slabs from D.P.C. mill. Geneva Steel Co., $58.64, Pas. ports.)

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $47; Detroit, del., $49; Duluth, billets, $49; forging billets fob Pac. ports, $59.

(Andrews Steel Co. may quote carbon forging billets $5C gross ton at established basing points; Follansbee Steel Corp., $49.50 fob Toronto, O.; Geneva Steel Co., $64.64, Pacific ports.)

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $58.43; del. Detroit $60.43; eastern Mich. $61.43.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $38. (Empire Sheet & Tin Plate Co., Mansfield, O., carbon sheet bars, $39, fob mill.)

Skelp: Pittsburgh, Chicago, Sparrows Point, Youngstown, Coatesville, lb, 2.05c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, No. 5—⅜ in. inclusive, per 100 lb, $2.30. Do., over ⅜—47/64-in., incl., $2.45; Galveston, base, $2.40 and $2.55, respectively. Worcester add $0.10; Pacific ports $0.50.

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham base, 20 tons one size, 2.50c; Duluth, base, 2.60c; Detroit, del., 2.60c; eastern Mich., 2.65c; New York, del., 2.86c; Phila., del., 2.86c; Gulf ports, dock, 2.85c; Pac., ports, dock, 3.15c. (Sheffield Steel Corp. may quote 2.75c, fob St. Louis; Joslyn Mfg. & Supply Co., 2.55c, fob Chicago.)

Rail Steel Bars: Same prices as for hot-rolled carbon cars except base is 5 tons.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.921c; Detroit, del., 3.021c. (Texas Steel Co. may use Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

AISI Series	(*Basic O-H)	AISI Series	(*Basic O-H)
1300	$0.108	4300	$1.839
2300	1.839	4600	1.298
2500	2.759	4800	2.326
3000	0 541	5100	0.379
3100	0.920	5130 or 5152	0.494
3200	1.461	6120 or 6152	1.028
3400	3.462	6145 or 6150	1.298
4000	0.487	8612	0.703
4100 (.15-.25 Mo)	0.757	8720	0.757
(.20-.30 Mo)	0.812	9830	1.407

* Add 0.25 for acid open-hearth; 0.50 electric.

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 20,000-39,999 lb, 3.10c; Detroit, 3.15c; Toledo, 3.25c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 3.625c; Detroit, del., 3.725c, eastern Mich.; 3.755c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and 2.50c; Gulf ports, dock, 2.70c; Pacif dock, 2.75c.

Reinforcing Bars (Rail Steel): Pittsbu cago, Gary, Cleveland, Birmingham, town, Buffalo, base, 2.35c; Detroit, del eastern Mich. and Toledo, del., 2.5(ports, dock, 2.70c.

Iron Bars: Single refined, Pitts., 4.76c refined, 5.84c; Pittsburgh, staybolt, 6.2 Haute, single ref., 5.42c; double ref.,

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicag Cleveland, Birmingham, Buffalo, You Sparrows Pt., Middletown, base, 2.425 ite City, base, 2.525c; Detroit, del., eastern Mich., del., 2.575c; Phila., del. New York, del., 2.685c; Pacific ports. (Andrews Steel Co. may quote hot-roll for shipment to the Detroit area on dletown, O., base; Alan Wood Steel C shohocken, Pa., may quote 3.00c on bon sheets, Sparrows Point, Md.)

Cold-Rolled Sheets: Pittsburgh, Chicag land, Gary, Buffalo, Youngstown, Mi base, 3.275c; Granite City, base, 3.3 troit, del., 3.375c; eastern Mich., del. New York, del., 3.615c; Phila., del., pacific ports, 3.925c.

Galvanized Sheets, No. 24: Pittsbur cago, Gary, Birmingham, Buffalo, You Sparrows Point, Middletown, base, 4.0 ite City, base, 4.15c; New York, del Phila., del., 4.24c; Pacific ports, 4.60

Corrugated Galv. Sheets: Pittsburgh, Gary, Birmingham, 29-gage, per squa

Culvert Sheets: Pittsburgh, Chicag Birmingham, 16-gage not corrugated alloy, 4.15c; Granite City, 4.25c; Pacif 4.60c; copper iron, 4.50c; pure iron, 4.5 coated, hot-dipped, heat-treated, No. burgh, 4.60c.

Aluminized Sheets, 20 gage: Pittsbur dipped, coils or cut to lengths, 9.00c.

ameling Sheets: 10-gage; Pittsburgh, Chigo, Gary, Cleveland, Youngstown, Middlewn, base 3.20c; Granite City, base 3.30c; troit, del., 3.30c; eastern Mich., 3.35c; Pac ports, 3.85c; 20-gage: Pittsburgh, Chicago, ry, Cleveland, Youngstown, Middletown, se, 3.80c; Detroit, del., 3.90c; eastern Mich., 5c; Pacific ports, 4.45c.

ctrical Sheets No. 24:

	Pittsburgh Base	Pacific Ports	Granite City
ld grade	3.90c	4.65c	4.00c
mature	4.25c	5.00c	4.35c
ctrical	4.75c	5.50c	4.85c
tor	5.425c	6.175c	5.525c
namo	6.125c	6.875c	6.225c
ansformer			
2	6.625c	7.375c	.....
5	7.625c	8.375c	.....
8	8.125c	8.875c	.....
2	8.925c	9.675c	.....

t-Rolled Strip: Pittsburgh, Chicago, Gary veland, Birmingham, Youngstown, Middlewn, 6-in. and narrower: Base, 2.45c; Detroit, ., 2.55c; eastern Mich., del., 2.60c; Pacific ts, 3.10c. (Superior Steel Corp. may quote 0c, Pitts.)

er 6-in.: Base, 2.35c; Detroit, del., 2.45c; tern Mich., del., 2.50c; Pacific ports, 3.00c. perior Steel Corp. may quote 3.20c, Pitts.)

ld-Rolled Strip: Pittsburgh, Cleveland, ungstown, 0.25 carbon and less, 3.05c; Chigo, base, 3.15c; Detroit, del., 3.15c; eastern ch., del., 3.20c; Worcester, base, 3.25c. (Superior Steel Corp. may quote 4.70c, Pitts.)

ld-Finished Spring Steel: Pittsburgh, Clevend base, 0.26-0.50 carbon, 3.03c. Add 0.20c Worcester.

n, Terne Plate

2A ceiling prices announced March 1, 1946.)

Plate: Pittsburgh, Chicago, Gary, 100-lb e box, $5.25; Granite City, Birmingham, rrows Point, $5.35.

ctrolytic Tin Plate: Pittsburgh, Gary, 100-base box 0.25 lb tin, $4.60; 0.50 lb tin, 75; 0.75 lb tin, $4.90; Granite City, Birmham, Sparrows Point, $4.70, $4.85, $5.00, pectively.

Mill Black Plate: Pittsburgh, Chicago, y, base 29-gage and lighter, 3.30c; Granite y, Birmingham, Sparrows Point, 3.40c; Pa- ports, boxed, 4.30c.

ag Ternes: Pittsburgh, Chicago, Gary, No. unassorted, 4.05c; Pacific ports, 4.80c.

nufacturing Ternes (Special Coated): Pittsgh, Chicago, Gary, 100-base box, $4.55; nite City, Birmingham, Sparrows Point, 5.

fing Ternes: Pittsburgh base per package sheets; 20 x 28 in., coating I. C. 8-lb .50; 15-lb $14.50; 20-lb $15.50 (nom.); 40- $20.00 (nom.).

ates

bon Steel Plates: Pittsburgh, Chicago, y, Cleveland, Birmingham, Youngstown, rrows Point, Coatesville, Claymont, 2.50c; v York, del., 2.71c; Phila., del., 2.558c; Louis, 2.74c; Boston, del., 2.86c; Pacific s, 3.05c; Gulf ports, 2.85c.

anite City Steel Co. may quote carbon es 2.65c fob DPC mill; Geneva Steel Co., vo, Utah, 3.20c fob Pac. ports; Central & Steel Co., Harrisburg, Pa., 2.80c, bas points; Lukens Steel Co., Coatesville, Pa., c, base; Worth Steel Co., Claymont, Del., c, base; Alan Wood Steel Co., Conshoken, Pa., 2.75c base.)

or Plates: Pittsburgh, Chicago, 3.75c; Pa- ports, 4.40c; Gulf ports, 4.10c.

n-Hearth Alloy Plates: Pittsburgh, Chi-, Coatesville, 3.787c; Gulf ports, 4.273c; fic ports, 4.49c.

i Steel Plates: Coatesville, 10% cladding: el-clad, 18.72c; inconel-clad, 26.00c; monel-, 24.96c.

apes

ctural Shapes: Pittsburgh, Chicago, Gary, ningham, Buffalo, Bethlehem, 2.35c; New k, del., 2.54c; Phila., del., 2.48c; Pacific s, 3.00c; Gulf ports, 2.70c.

oenix Iron Co., Phoenixville, Pa., may e the equivalent of 2.60c, Bethlehem, Pa., he general range and 2.70c on beams and nels from 4 to 10 inches.)

l Piling: Pittsburgh, Chicago, Buffalo, c; Pacific ports, 3.20c.

re and Wire Products

Pittsburgh, Chicago, Cleveland and Birmam, per 100 pounds)

to Manufacturers in carloads

ht basic or bessemer *$3.05
ng (except Birmingham) *$4.00

Products to Trade

s and staples

dard and cement-coated ..... †$3.75
anized ..... ‡$3.40
, Merchant Quality
ealed ..... §$3.50
anized ..... §$3.85

(Fob Pittsburgh, Chicago, Cleveland, Birmingham, per base column)

Woven fence, 15½ gage and heavier	72
Barbed wire, 80-rod spool	**79
Barbless wire, twisted	**79
Fence posts	74
Bale ties, single loop	72½

*Add $0.10 for Worcester, $0.05 for Duluth and $0.50 for Pacific ports.

†Add $0.30 for Worcester, $0.50 for Pacific ports. Nichols Wire & Steel may quote $4.25; Pittsburgh Steel Co., $4.10.

‡Add $0.50 for Pacific ports.

§Add $0.10 for Worcester; $0.70 Pacific ports.

**Pittsburgh Steel Co. may quote 89.

Tubular Goods

Welded Pipe: Base price in carloads, threaded and coupled to consumers about $200 per net ton. Base discounts on steel pipe Pittsburgh and Lorain, O.; Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Pittsburgh base only on wrought iron pipe.

Butt Welded

Steel			Iron		
In.	Blk.	Galv.	In.	Blk.	Galv.
⅛	53	30	¼	21	0½
¼ & ⅜	56	37½	⅜	27	7
½	60½	48	1-1¼	31	18
¾	63½	52	1½	35	15½
1-3	65½	54½	2	34½	15

Lap Weld

Steel			Iron		
In.	Blk.	Galv.	In.	Blk.	Galv.
2	58	46½	1¼	20	0½
2½-3	61	49½	1½	25½	7
3½-6	63	51½	2	27½	9
7-8	62	49½	2½-3½	28½	11½
9-10	61½	49	4	30½	15
11-12	60½	48	4½-8	29½	14
			9-12	25½	9

Boiler Tubes: Net base prices per 100 feet fob Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D. sizes	B.W.G.	—Seamless— Hot Rolled	Cold Drawn	—Elec. Weld— Hot Rolled	Cold Rolled
1"	13	....	$9.90	$9.36	$9.65
1¼"	13	....	11.73	9.63	11.43
1½"	13	$10.91	12.96	10.63	12.64
1¾"	13	12.41	14.75	12.10	14.37
2"	13	13.90	16.52	13.53	16.19
2¼"	13	15.50	18.42	15.06	18.03
2½"	12	17.07	20.28	16.57	19.83
2¾"	12	18.70	22.21	18.11	21.68
2¾"	12	19.82	23.54	19.17	22.95
3"	12	20.79	24.71	20.05	24.02
3½"	11	26.24	31.18	25.30	30.29
4"	10	32.56	38.68	31.32	37.52
4½"	9	43.16	51.29	....	....
5"	9	49.96	59.36	....	....
6"	7	76.71	91.14	....	....

Pipe, Cast Iron: Class B. 6-in. and over, $60 per net ton, Birmingham; $65, Burlington, N. J.; $62.80, del., Chicago; 4-in. pipe, $5 higher. Class A pipe, $3 a ton over class B.

Rails, Supplies

Standard rails, over 60-lb, fob mill, net ton, $43.40. Light rails (billet), Pittsburgh, Chicago, Birmingham, net ton, $49.18.

Relaying rails, 35 lb and over, fob railroad and basing points, $31-$33.

Supplies: Track bolts, 6.50c; heat treated, 6.75c. Tie plates $51 net ton, base. Standard spikes, 3.65c.

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago. Additional discounts: 5 for carloads; 10 for full containers, except tire, step and plow bolts.

(Ceiling prices advanced 12 per cent, effective July 27, 1946; discounts remain unchanged.)

Carriage and Machine

½ x 6 and smaller	65½ off
Do., ⅝ and ⅝ x 6-in. and shorter	63½ off
Do., ¾ to 1 x 6-in. and shorter	61 off
1¼ and larger, all lengths	59 off
All diameters, over 6-in. long	59 off
Tire bolts	50 off
Step bolts	56 off
Plow bolts	65 off

Stove Bolts

In packages, nuts separate, 71-10 off, nuts attached, 71 off; bulk, 80 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hex	U.S.S.	S.A.E.
⅞-in. and smaller		64
½-in. and smaller	62	..
½-in.-1-in.		60
⅞-in.-1-in.	59	..
1⅛-in.-1½-in.	57	58
1⅝-in. and larger	56	..

Additional discount of 10 for full kegs.

Hexagon Cap Screws

Upset 1-in., smaller	64 off
Milled 1-in., smaller	60 off

Square Head Set Screws

Upset 1-in. and smaller	71 off
Headless, ¼-in. and larger	60 off
No. 10 and smaller	70 off

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural	4.75c
⅞-inch and under	*65-5 off

*Plus 12 per cent increase on base prices, effective July 26.

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $2.75-$3.00 off

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; reg. carbon 15.15c; extra carbon 19.48c; special carbon 23.80c; oil-hardening 25.97c; high carbon-chromium 46.53c.

W	Cr	V	Mo	Base, per lb
18.00	4	1	....	72.49c
1.5	4	1	8.5	58.43c
....	4	2	3	58.43c
6.40	4.15	1.90	5	62.22c
5.50	4.50	4	4.50	75.74c

Stainless Steels

Base, Cents per lb

CHROMIUM NICKEL STEELS

	Bars	Plates	Sheets	H.R. Strip	C.R. Strip
302	25.96c	29.21c	36.79c	23.93c	30.30c
303	28.13	31.38	38.95	29.21	35.71
304	27.05	31.38	38.95	25.45	32.46
308	31.38	36.79	44.36	30.84	37.87
309	38.95	43.28	50.85	40.03	50.85
310	53.02	56.26	57.35	52.74	60.59
312	38.95	43.28	53.02	....	....
*316	43.28	47.61	51.94	43.28	51.94
§321	31.38	36.79	44.36	31.65	41.12
†347	35.71	41.12	48.69	35.71	45.44
431	20.56	23.80	31.38	18.94	24.35

STRAIGHT CHROMIUM STEEL

403	23.93	26.51	31.92	22.99	29.21
**410	20.02	23.93	28.67	18.39	23.80
416	20.56	23.80	29.21	19.75	25.45
††420	25.96	30.84	36.25	25.70	39.49
430	20.56	23.80	31.38	18.94	24.35
‡‡430F	21.10	24.35	31.92	20.29	26.51
440A	25.96	30.84	36.25	25.70	39.49
442	24.35	27.59	35.17	25.96	34.62
443	24.35	27.59	35.17	25.96	34.62
446	29.76	33.00	39.49	37.87	56.26
501	8.66	12.98	17.04	12.98	18.39
502	9.74	14.07	18.12	14.07	19.48

STAINLESS CLAD STEEL (20%)

(Fob Pittsburgh and Washington, Pa., plate prices include annealing and pickling.)

304	....	19.48	20.56	....
410	....	17.31	18.39	....
430	....	17.85	18.94	....
446	....	19.48	20.56	....

* With 2-3% molybdenum. § With titanium. † With columbium. ** Plus machining agent. †† High carbon. ‡‡ Free machining.

Metallurgical Coke

Price Per Net Ton

Beehive Ovens

Connellsville, furnace	*$8.75
Connellsville, foundry	9.25- 9.75
New River, foundry	10.25-10.50
Wise county, foundry	9.00- 9.50
Wise county, furnace	8.50- 9.00

By-Product Foundry

Kearney, N. J., ovens	14.40
Chicago, outside delivered	14.35
Chicago, delivered	15.10
Terre Haute, delivered	14.85
Milwaukee, ovens	15.10
New England, delivered	16.00
St. Louis, delivered	†15.10
Birmingham, delivered	12.25
Indianapolis, delivered	14.85
Cincinnati, delivered	14.60
Cleveland, delivered	14.55
Buffalo delivered	14.75
Detroit, delivered	15.10
Philadelphia, delivered	14.63

* Operators of hand-drawn ovens using trucked coal may charge $9.35; retroactive to May 17, 1946, on adjustable pricing.

† 15.68 from other than Ala., Mo., Tenn.

Coke By-Products

Spot, gal, freight allowed east of Omaha:	
Pure and 90% benzol	15.00c
Toluol, two degree	22.00c
Industrial xylol	22.00c
Per pound fob works	
Phenol (car lots, returnable drums)	11.25c
Do., less than carlots	12.00c
Do., tank cars	10.25c
Eastern plants, per pound	
Naphthalene flakes, balls, bbl, to jobbers, "household use"	9.00c
Per ton, bulk, fob plants	
Sulphate of ammonia	$30.00

WAREHOUSE STEEL PRICES

Base delivered price, cents per pound, for delivery within switching limits, subject to established extras. Quotations based on mill prices announ
March 1, 1946

	Hot-rolled bars	Structural shapes	Plates	Floor plates	Hot-rolled sheets (10-gage base)	Hot-rolled strip (14-gage and lighter, 6-in and narrower)	Hot-rolled strip (12-gage and heavier wider than 6-inch)	Galvanized flat sheets (24-gage base)	Cold-rolled sheets (17-gage base)	Cold-finished bars	
Boston	4.356[1]	4.203[1]	4.203[1]	6.039[1]	4.050[1]	5.548[1]	4.418[1]	5.725[14]	5.031[14]	4.656[22]	4.
New York	4.134[1]	4.038[1]	4.049[1]	5.875[1]	3.856[1]	4.375[1]	4.275[1]	5.501[13]	4.838[14]	4.584[22]	5.
Jersey City	4.155[1]	4.018[1]	4.049[1]	5.875[1]	3.856[1]	4.375[1]	4.275[1]	5.501[13]	4.890[14]	4.605[22]	5.
Philadelphia	4.114[1]	3.937[1]	3.875[1]	5.564[1]	3.774[1]	4.664[1]	4.554[1]	5.499[13]	5.139[22]	4.564[22]	5.
Baltimore	4.093[1]	4.05[1]	3.865[1]	5.543[1]	3.64[1]	4.293[1]	4.193[1]	5.365[17]	5.118[22]	4.543[22]	.
Washington	4.232[1]	4.22[1]	4.067[1]	5.632[1]	3.842[1]	4.432[1]	4.332[1]	5.667[17]	5.007[22]	4.532[22]	..
Norfolk, Va.	4.377[1]	4.303[1]	4.262[1]	5.777[1]	4.037[1]	4.927[1]	4.477[1]	5.862[17]	4.552[22]	4.677[22]	..
Bethlehem, Pa.*	..	3.70[1]	..	..	..	..	..	..	..	..	..
Claymont, Del.*	..	..	3.70[1]	..	..	..	..	..	..	..	..
Coatesville, Pa.*	..	..	3.70[1]	..	..	..	..	..	..	..	..
Buffalo (city)	3.60[1]	3.65[1]	3.92[1]	5.55[1]	3.575[1]	4.21[1]	4.11[1]	5.20[13]	4.625[16]	4.20[22]	4.
Buffalo (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[13]	4.525[16]	4.10[22]	4.
Pittsburgh (city)	3.60[1]	3.65[1]	3.65[1]	5.25[1]	3.575[1]	3.95[1]	3.850[1]	5.327[13]	4.625[16]	4.20[22]	4.
Pittsburgh (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[13]	4.525[16]	4.10[22]	4.
Cleveland (city)	3.60[1]	3.88[1]	3.65[1]	5.48[1]	3.575[1]	3.95[1]	3.850[1]	5.347[13]	4.625[16]	4.20[22]	4.
Cleveland (country)	3.50[1]	..	3.55[1]	..	3.475[1]	3.85[1]	3.750[1]	..	4.525[16]	4.10[22]	4.
Detroit	3.70[1]	3.952[1]	3.90[1]	5.572[1]	3.675[1]	4.050[1]	3.950[1]	5.491[13]	4.725[16]	4.25[13]	4.
Omaha (city, del.)	4.32[1]	4.37[1]	4.37[1]	5.97[1]	4.045[1]	4.52[1]	4.42[1]	6.00[13]	5.72[16]	4.945[22]	..
Omaha (country)	4.22[1]	4.27[1]	4.27[1]	5.87[1]	3.945[1]	4.42[1]	4.32[1]	5.90[13]	..	..	..
Cincinnati	3.902[1]	3.983[1]	3.952[1]	5.583[1]	3.671[1]	4.046[1]	3.946[1]	5.296[13]	4.271[16]	4.602[22]	..
Youngstown*	..	..	..	..	..	..	..	4.85[13]	..	..	..
Middletown, O.*	..	..	..	..	3.475[1]	3.85[1]	3.750[1]	5 10[13]	..	..	..
Chicago (city)	3.75[1]	3.80[1]	3.80[1]	5.40[1]	3.475[1]	3.95[1]	3.850[1]	†5.40[13]	4.425[16]	4.20[22]	4.
Milwaukee	3.908[1]	3.958[1]	3.958[1]	5.558[1]	3.633[1]	4.108[1]	4.008[1]	†5.558[13]	4.583[16]	4.358[22]	5.
Indianapolis	3.83[1]	3.88[1]	3.88[1]	5.48[1]	3.748[1]	4.118[1]	4.018[1]	5.368[13]	4.793[16]	4.43[22]	5.
St. Paul	4.092[2]	4.142[2]	4.142[2]	5.742[2]	3.817[2]	4.292[2]	4.192[2]	5.666[13]	4.767[16]	4.852[22]	5.
St. Louis	3.918[1]	3.968[1]	3.968[1]	5.568[1]	3.648[1]	4.118[1]	4.018[1]	5.622[13]	4.593[16]	4.522[22]	5.
Memphis, Tenn.	4.296[1]	4.346[1]	4.346[1]	6.071[1]	4.221[1]	4.596[1]	4.496[1]	5.746[13]	..	4.821[22]	..
Birmingham	3.75[1]	3.80[1]	3.80[1]	6.153[1]	3.675[1]	4.05[1]	4.05[1]	5.20[13]	5.077[16]	4.99[22]	5.
New Orleans (city)	4.358[1]	4.408[1]	4.408[1]	6.329[1]	4.283[1]	4.658[1]	..	5.808[13]	5.304[16]	5.079[22]	..
Houston, Tex.	4.00[3]	4.50[1]	4.50[1]	5.75[3]	3.988[3]	4.668[3]	4.568[3]	5.768[13]	5.819[16]	4.10[22]	..
Los Angeles	4.65[4]	4.90[4]	5.20[4]	7.45[4]	5.225[4]	5.30[4]	5.200[4]	6.55[13]	7.425[3]	6.033[22]	5.
San Francisco	4.20[7]	4.15[7]	4.15[7]	5.85[7]	4.125[7]	5.85[7]	4.50[7]	6.35[13]	6.875[13]	5.783[22]	7.
Portland, Oreg.	4.70[27]	4.70[27]	5.00[27]	6.75[27]	4.875[27]	6.65[27]	5.000[27]	6.20[13]	6.825[13]	5.983[13]	..
Tacoma, Wash.	4.60[4]	4.70[6]	5.00[6]	6.75[6]	4.87[6]	5.80[6]	4.60[6]	6.40[13]	6.55[13]	6.23[22]	..
Seattle	4.60[6]	4.70[6]	5.00[6]	6.75[6]	4.87[6]	5.80[6]	4.60[6]	6.40[13]	6.55[13]	6.23[22]	..

*Basing point cities with quotations representing mill prices, plus warehouse spread; †open market price.

BASE QUANTITIES

[1]—400 to 1999 pounds; [2]—400 to 14,999 pounds; [3]—any quantity; [4]—300 to 1999 pounds; [5]—400 to 8999 pounds; [6]—300 to 9999 pounds; [7]—400 to 39,999 pounds; [8]—under 2000 pounds; [9]—under 4000 pounds; [10]—500 to 1499 pounds; [11]—one bundle to 39,999 pounds; [12]—150 to 2249 pounds; [13]—150 to 1499 pounds; [14]—three to 24 bundles; [15]—450 to 1499 pounds; [16]—one bundle to 1499 pounds; [17]—one to nine bundl [18]—one to six bundles; [19]—100 to 749 pounds; [20]—300 to 1999 poun [21]—1500 to 39,999 pounds; [22]—1500 to 1999 pounds; [23]—1000 39,999 pounds; [24]—400 to 1499 pounds; [25]—1000 to 1999 poun [26]—under 25 bundles. Cold-rolled strip, 2000 to 39,999 pounds, ba [27]—300 to 4999 pounds.

ORES

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.45
Mesabi nonbessemer	5.05
High phosphorus	5.05
Mesabi bessemer	5.20
Old range nonbessemer	5.30

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56-63% contract	13.00

Foreign Ore

Cents per unit, cif Atlantic ports

Manganiferous ore, 45-55% Fe., 6-10% Mn.	Nom.
N. African low phos.	Nom.
Swedish basic, 60 to 68%	Nom.
Spanish, N. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro	7.50-8.00

Tungsten Ore

Chinese Wolframite, per short ton unit, duty paid	$24.00

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Oreg., or Tacoma, Wash.

(3 8 paying for discharge; dry basis, subject to penalties if guarantees ore not met.)

Indian and African

48% 2.8:1	$38.75
48% 3:1	41.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio	$27.40
45% no ratio	28.30
48% no ratio	31 00
50% no ratio	32.80

Brazilian—nominal

44% 2.5:1 lump	$33.65
48% 3:1 lump	43.50

Rhodesian

45% no ratio	$28.30
48% no ratio	31.00
48% 3:1 lump	41.00

Domestic (seller's nearest rail)

48% 3:1	$43.50

less $7 freight allowance.

Manganese Ore

Sales prices of Office of Metals Reserve, cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85c; Fontana, Calif., Provo, Utah, and Pueblo, Colo., 91c; pri include duty on imported ore are subject to established premiu penalties and other provisions. Pr at basing points which are points of discharge of imported m ganese ore is fob cars, shipside, dock most favorable to the buy Outside shipments direct to c sumers at 15c to 17c per unit than Metal Reserve prices.

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0

NATIONAL EMERGENCY STEELS (Hot Rolled)

(Extras for alloy content)

Basic open-hearth Electric furna

Designation	Chemical Composition Limits, Per Cent C	Mn	Si	Cr	Ni	Mo	Bars per 100 lb.	Billets per GT	Bars per 100 lb.	Bille per
NE 9415	.13-.18	.80-1.10	.20-.35	.30-.50	.30-.60	.08-.15	$0.812	$16.230	$1.353	$27.0
NE 9425	.23-.28	.80-1.20	.20-.35	.30-.50	.30-.60	.08-.15	.812	16.230	1.353	27.0
NE 9442	.40-.45	1.00-1.30	.20-.35	.30-.50	.30-.60	.08-.15	.866	17.312	1.407	28.1
NE 9722	.20-.25	.50-.80	.20-.35	.10-.25	.40-.70	.15-.25	.703	14.066	1.244	24.8
NE 9912	.10-.15	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.5
NE 9920	.18-.23	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.298	25.968	1.677	33.5

Extras are in addition to a base price of 2.921c, per pound on finished products and $58.43 per gross t on semifinished steel major basing points and are in cents per pound and dollars per gross ton. No prices quo on vanadium alloy.

Pig Iron

laximum prices per gross ton fixed by OPA schedule No. 10, last nded July 27, 1946; $2 increase may be charged on adjustable pricing tracts made between May 29 and July 27. Delivered prices do not ude 3 per cent federal tax, effective Dec. 1, 1942.

	No. 2 Foundry	Basic	Bessemer	Malleable
hlehem, Pa., base	$29.50	$29.00	$30.50	$30.00
ewark, N. J., del.	31.20	30.70	32.20	31 70
rooklyn, N. Y., del.	32.28	.....	.....	32.78
lsboro, Pa., base	29.50	29.00	30.50	30.00
rmingham, base	24.88	23.50	29.50	.....
altimore, del.	30 22	.....	.....	.....
oston, del.	29.68	.....	.....	.....
hicago, del.	28.72	.....	.....	.....
incinnati, del.	28.94	28.06	.....	.....
leveland, del.	28.62	27.74	.....	.....
ewark N. J.	30 82	.....	.....	.....
hiladelphia, del.	30.05	29.55	.....	.....
t. Louis, del.	28.62	29 54	.....	.....
alo, base	28 50	27 50	29.50	29.00
oston, del.	30.06	29.56	31.06	30.56
ochester, del.	30.03	.....	31.03	30.53
yracuse, del.	30.58	.....	31.58	31.08
cago, base	28.50	28.00	29.00	28.50
lwaukee, del.	29.73	29.23	30.23	29 73
uskegon, Mich., del.	32.05	.....	.....	32.05
veland, base	28.50	28.00	29.00	28.50
kron, Canton, del.	30.04	29 54	30.54	30.04
roit, base	28.50	28 00	29 00	28.50
ginaw, Mich., del.	30.81	30 31	31 31	30.81
uth, base	29.00	28.50	29 50	29.00
t. Paul, del.	31.13	30.63	31 63	31 13
e, Pa., base	28.50	28.00	29 50	29.00
rett, Mass., base	29.50	29.00	30 50	30.00
oston, del.	30 06	29.56	31 06	30.56
nite City, Ill., base	28.50	28.00	29.00	28.50
t. Louis, del.	29.00	28.50	.....	29 00
milton, O., base	28.50	28.00	.....	28.50
incinnati, del.	29 68	29.18	.....	29 68
ille Island, Pa., base	28.50	28.00	29.00	28.50
Pittsburgh, del., N.&S. sides	29 27	28.77	29.77	29.27
vo, Utah, base	26.50	26.00	.....	.....
rpsville, Pa., base	28.50	28.00	29.00	28.50
rrows Point, base	29.50	29.00	.....	.....
altimore, del.	30.60	.....	.....	.....
elton, Pa., base	.....	29.00	.....	.....
deland, Pa., base	29.50	29.00	30.50	30.00
hiladelphia, del.	30.43	29.93	.....	30.93
edo, O., base	28.50	28.00	29.00	28.50
ngstown, O., base	28.50	28.00	29 00	28.50
ansfield, O., del.	30.66	30.16	31.16	30.66

To Neville Island base add: 61c for McKees Rocks, Pa.; 93c vrenceville, Homestead, McKeesport, Ambridge, Monaco, Aliquippa; (water), Monongahela; $1.24, Oakmont, Verona; $1.38, Brackenridge.

Exceptions to above prices: Struthers Iron & Steel Co., Struthers, O., y charge 50 cents a ton in excess of basing point prices for No. 2 ndry, basic, bessemer and malleable pig iron. Republic Steel Corp. y quote $2 a ton higher for foundry and basic pig iron on the Birming- n base.

High Silicon, Silvery

6.00-6.50 per cent (base) $34.00
6.51-7.00 . .$35.00 9.01- 9.50 . 40.00
7.01-7.50 . . 36.00 9.51-10.00 . 41.00
7.51-8.00 . . 37.00 10.01-10.50 . 42.00
8.01-8.50 . . 38.00 10.51-11.00 . 43.00
8.51-9.00 . . 39.00 11.01-11.50 . 44.00

Fob Jackson county, O., per gross ton; Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Electric Furnace Ferrosilicon: Si 14.01 to 14.50%, $50 Jackson co.; each additional 0.50% silicon up to and including 18% add $1; low impurities not exceeding 0.005 P, 0.40 Si, 1.0% C, add $1.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton.

Charcoal Pig Iron

Semi-cold blast, low phosphorus.

Fob furnace, Lyles, Tenn., $33.00. (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $28.00
Valley base 28.00

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Buffalo, N. Y., $34.00 base; $35.38, del., Philadelphia. Intermediate phosphorus, Central Furnace, Cleveland, $31.00.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge not to exceed 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge not to exceed 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Refractories

Per 1000, fob shipping point. Net prices

Fire Clay Brick

Super Duty

Pa., Mo., Ky. $81.00

High Heat Duty

Pa., Ill., Md., Mo., Ky. . . 65.00
Ala., Ga. 65.00
N. J. 70.00

Intermediate Heat Duty

Ohio 57.00
Pa., Ill., Md., Mo., Ky. 59.00
Ala., Ga. 51.00
N. J. 62.00

Low Heat Duty

Pa., Md., Ohio 51.00

Malleable Bung Brick

All bases 75.00

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry Press 42.00
Wire Cut 40.00

Silica Brick

Pennsylvania 65.00
Joliet, E. Chicago 74.00
Birmingham, Ala. 65.00

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.
Bulk 22.00
Bags 26.00

Basic Brick

Net ton, fob Baltimore, Plymouth Meeting, Chester, Pa.
Chrome brick 54.00
Chem. bonded chrome 54.00
Magnesite brick 76.00
Chem. bonded magnesite ... 65.00

Fluorspar

Metallurgical grade, fob shipping point in Ill., Ky., net ton, carloads, effective CaF_2 content, 70% or more, $33; 65% to 70%, $32; 60% to 65%, $31; less than 60%, $30.

Ferroalloy Prices

egeleisen: 19-21% carlot per ss ton, Palmerton, Pa., $36; sburgh, $40.50; Chicago, $40.60.
romanganese, standard: 78-82% gross ton, duty paid, $135 fob s, Baltimore, Philadelphia or New k, whichever is most favorable buyer, Rockdale or Rockwood, n. (where Tennessee Products is producer), Birmingham, Ala. ere Sloss-Sheffield Steel & Iron is producer); $140 fob cars, sburgh (where Carnegie-Illinois el Corp. is producer); add $6 for ked c.l., $10 for ton, $13.50 for ton; $1.70 for each 1%, or frac- n contained manganese over 82% under 78%.
romanganese, low carbon: East- zone: Special, 21c; regular, 50c; medium, 14.50c; central n e: Special, 21.30c; regular, 80c; medium, 14.80c; western e: Special, 21.55c; regular, 05c; medium, 15.75c. Prices are pound contained Mn, bulk car- shipments, fob shipping point, ght allowed. Special low-carbon content of 90% Mn, 0.10% C, 0.06% P.
romanganese Briquets: (Weight rox. 3 lb and containing exactly b Mn) per lb of briquets. Con- ct, carlots, bulk 0.0605c, packed 63c, tons 0.0655c, less 0.068c, tern, freight allowed; 0.063c, 055c, 0.0755c and 0.078c, central; 86c, 0.0685c, 0.0855c and 0.088c, stern; spot up 0.25c.
rotungsten: Spot 10,000 lb or re, per lb contained W, $1.90; tract, $1.88; freight allowed as west as St. Louis.
rotitanium: 40-45%, R.R. freight owed, per lb contained Ti; ton lots $1.23; less-ton lots $1.25; eastern. Spot up 5c per lb.
Ferrotitanium: 20-25%, 0.10 maximum carbon; per lb contained Ti; ton lots $1.35; less-ton lots $1.40 eastern. Spot up 5c per lb.
Ferrotitanium, High-Carbon: 15-20% contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C $142.50; 3-5% C $157.50.
Ferrovanadium: V 35-55%, contract basis, per lb contained V, fob producers plant with usual freight allowances; open-hearth grade $2.70; special grade $2.80; highly-special grade $2.90.
Ferromolybdenum: 55-75% per lb. contained Mo, fob. Langeloth and Washington, Pa., furnace, any quantity 95.00c.
Ferrophosphorus: 17-19%, based on 18% P content with unitage of $3 for each 1% of P above or below the base; gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.
Ferrosilicon: Contract, lump, packed; eastern zone quotations: 90-95% c.l. 12.65c, ton lots 13.10c, smaller lots 13.50c; 80-90% c.l. 10.35c, ton lots 10.85c, smaller lots 11.35c; 75% c.l. 9.40c, ton lots 9.95c, smaller lots 10.45c; 50% c.l. 7.90c, ton lots 8.50c, smaller lots 9.10c. Prices are fob shipping point, freight allowed, per lb. of contained Si. Spot prices 0.25c higher on 80-90%, 0.30c on 75%, 0.45c on 50%. Deduct 0.85c for bulk carlots.
Ferro-Boron: (B 17.50% min., Si 1.50% max., Al 0.50% max. and C 0.50% max.) per lb of alloy contract ton lots $1.20, less ton lots $1.30, eastern, freight allowed; $1.2075 and $1.3075 central; $1.229 and $1.329, western; spot add 5c.
Ferrocolumbium: 50-60% per lb contained columbium in gross ton lots, contract basis, R. R. freight allowed, eastern zone, $2.25; less-ton lots $2.30. Spot prices up 10 cents.
Ferrochrome: Contract, lump, packed; **high carbon,** eastern zone, c.l. 15.05c, ton lots 15.55c; central zone, add 0.40c and 0.65c; western zone, add 0.5c and 1.85c; **high carbon, high nitrogen,** add 5c to all high carbon ferrochrome prices. Deduct 0.55c for bulk carlots. Spot prices up 0.25c.
Low carbon, eastern zone, bulk, c.l., max. 0.06% C 23c; 0.1% 22.50c, 0.15% 22c, 0.2% 21.50c, 0.5% 21c, 1% 20.50c, 2% 19.50c, add 1c for 2000 lb to c.l.; central zone, add 0.4c for bulk, c.l., and 0.65c for 2000 lb to c.l.; western zone, add 0.5c for bulk, c.l., and 1.85c for 2000 lb to c.l.; carload packed differential 0.45c. Prices are per pound of contained Cr, fob shipping points. **Low carbon, high nitrogen:** Add 2c to low carbon ferrochrome prices. For higher nitrogen low carbon, add 2c for each 0.25% of nitrogen over 0.75%.
Ferrochrome, Special Foundry: (Cr 62-66%, C about 5-7%): Contract, lump, packed, eastern zone, freight allowed, c.l. 15.60c, ton lots 16.10c, less than ton 16.75c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Deduct 0.55c for bulk carlots.
S. M. Ferrochrome, high carbon (Cr 60-65%, Si, Mn and C 4-6% each): Contract, lump, packed, eastern zone, freight allowed, c.l. 16.15c, ton lots 16.65c, less ton 17.30c; central zone, add 0.40c for c.l. and 0.65c for smaller lots; western zone, add 0.5c for c.l. and 1.85c for smaller lots. Prices are per lb of contained chromium; spot prices 0.25c higher. Deduct 0.55c for bulk carlots.
S.M. Ferrochrome, low carbon: (Cr 62-66%, Si 4-6%, Mn 4-8% and C 1.25% max.) Contract, carlot, bulk, 20.00c, packed 20 45c, ton lots 21 00c, less ton lots 22 00c, eastern, freight allowed, per pound contained chromium, 20.40c, 20 50c, 20 95c and 22.65c, central; 21.00c, 21.45c, 22.85c and 23.85c, western; spot up 0.25c.
Ferrochrome Briquets: Containing exactly 2 lb. Cr, packed, eastern zone, c.l. 9.50c, ton lots 9.80c, less than ton 10.10c, central zone, add 0.3c for c.l. and 0.5c for smaller lots; western zone, add 0.70c for c.l. and 2c for smaller lots. Deduct 0.30c for bulk carlots. Prices per lb. of briquets; spot prices 0.25c higher.
Chromium Metal: 97% min. chromium, max. 0.50% carbon, eastern zone, per lb contained chromium bulk, c.l., 79.50c, 2000 lb to c.l. 80c; central 81c and 82.50c; western 82.25c and 84.75c; fob shipping point, freight allowed.

Chromium-Copper: (Cr 8-11%, Cu 88-90%, Fe 1% max., Si 0.50% max.) contract, any quantity, 45c, eastern, Niagara Falls, N. Y., basis, freight allowed to destination, except to points taking rate in excess of St. Louis rate to which equivalent of St. Louis rate will be allowed; spot up 2c.

Calcium metal; cast: Contract ton lots or more $1.35, less, $1.60, pound of metal; $1.36 and $1.61 central, $1.40 and $1.65, western; spot up 5c.

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%), per lb. of alloy. Contract, carlots, 15.50c, ton lots 16.50c and less 17.00c, eastern, freight allowed; 16.00c, 17.35c, and 17.85c, central; 18.05c, 19.10c and 19.60c western; spot up 0.25c.

Calcium - Silicon: (Ca 30-35%, Si 60-65% and Fe 3.00% max.), per lb. of alloy. Contract, carlots, lump 13.00c, ton lots 14.50c, less 15.50c eastern, freight allowed; 13.50c, 15.25c and 16.25c, central; 15.55c, 17.40c and 18.40c, western; spot up 0.25c.

Silicon Metal: Min. 97% Si and max. 1% Fe, eastern zone, bulk, c.l., 12.90c; 2000 lb to c.l., 13.45c; central, 13.20c and 13.90c; western, 13.85c and 16.80c; min. 96% Si and max. 2% Fe, eastern, bulk; c.l., 12.50c, 2000 lb to c.l., 13.10c; central, 12.80c and 13.55c; western, 13.45c and 16.50c, fob shipping point, freight allowed. Price per lb contained Si.

Silicomanganese, containing exactly 2 lb. Mn and about ½ lb. Si, eastern zone, bulk, c.l. 5.80c, ton lots 6.35c; central zone, add 0.25c for c.l. and 1c for ton lots; western, add 0.55c for c.l. and 0.20c for ton lots. **Ferrosilicon,** weighing about 5 lb. and containing exactly 2 lb. Si, or about 2½ lb. and containing exactly 1 lb. Si. packed, eastern zone, c.l. 3.90c, ton lots 4.15c, less ton lots 4.45c; central zone, add 0.15c for c.l. and 0.40c for smaller lots; western zone, add 0.30c for c.l. and 0.45c for smaller lots. Prices are fob shipping point, freight allowed; spot prices 0.25c higher. Deduct 0.30c for bulk carlots.

Manganese Metal: (Min. 96% Mn, max. 2% Fe), per lb of metal, eastern zone, bulk, c.l., 30c, 2000 lb to c.l., 32c, central, 30.25c, and 33c; western. 30.55c and 35.05c.

Electrolytic Manganese: 99.9% plus, fob Knoxville, Tenn., freight allowed east of Mississippi on 250 lb or more: Carlots 32c, ton lots 34c, drum lots 36c, less than drum lot 38c. Add 1½c for hydrogen-removed metal.

Manganese-Boron: (Mn 75% approx., B 15-20%, Fe 5% max., Si 1.50% max. and C 3% max.) per lb of alloy. Contract ton lots, $1.89, less $2.01, eastern; freight allowed; $1 903 and $2.023, central, $1.935 and $2 055 western; spot up 5c.

Nickel-Boron: (B 15-18%, Al 1% max., Si 1.50% max., C 0.50% max., Fe 3% max., Ni, balance), per lb of alloy. Contract, 5 tons or more, $1.90, 1 ton to 8 ton, $2.00, less than ton $2.10, eastern, freight allowed; $1.9125, $2.0125 and $2.1125, central; $1.9445, $2.0445 and $2.1445, western; spot same as contract.

Borosil: 3 to 4% B, 40 to 45% Si, $6.25 lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: B 1.5-1.9%, ton lots, 45c lb; less-ton lots, 50c lb.

Carbortam: B 0.90 to 1.15% net ton to carload, 8c per lb fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy contract, carlots 25 00c, ton lots 26.00c, less ton lots 27.00c, eastern, freight allowed, 25 50c, 26 75c and 27.75c, central; 27 50c, 28 90c and 29.90c, western; spot up 0.25c.

Silvaz Alloy: (Si 35-40%, Va 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%), per lb of alloy. Contract, carlots 58.00c, ton lots 59 00c, less 60.00c, eastern freight allowed; 58.50c, 59 75c and 60.75c, central; 60.50c, 61 90c and 62.90c, western; spot up 0.25c.

SMZ Alloy: (Si 60-55%, Mn 5-7%, Zr 5-7% and Fe approx. 20% (per lb of alloy contract carlots 11.50c, ton lots 12.00c, less 12.50c, eastern zone, freight allowed; 12.00c, 12.85c and 13.35c central zone; 14 05c, 14.60c and 15.10c, western; spot up 0.25c.

CMSZ Alloy 4: (Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75% and C 3.00-4.50%). Contract carlots, bulk, 11.00c and packed 11.50c; ton lots 12.00c; less 12.50c, eastern, freight allowed; 11.50c and 12.00c, 12.75c, 13.25c, central; 13.50c and 14.00c, 14.75c, 15.25c, western; spot up 0.25c.

CMSZ Alloy 5: (Cr 50-56%, Mn 4-6%, Si 13.50-16.00%, Zr 0. 1.25%, C 3.50-5.00%) per lb alloy. Contract, carlots, bulk, 10.7 packed 11.25c, ton lots 11.75c, 12.25c, eastern, freight allow 11.25c, 11.75c, 12.50c and 13.(central; 13.25c and 13.75c, 14.50c 15.00c, western; spot up 0.25c.

Zirconium Alloy: Zr 12-15%, per of alloy, eastern contract, carl bulk, 4.60c, packed 4.80c, ton 4.80c, less tons 5c, carloads, b per gross ton $102.50; pac $107.50; ton lots $108; less-ton $112.50. Spot up $5 per ton.

Zirconium Alloy: Zr 35-40%, easte contract basis, carloads in bulk package, per lb of alloy 14.0 gross ton lots 15.00c; less-ton 16.00c. Spot up ¼c.

Alsifer: (Approx. 20% Al, 40% 40% Fe) contract basis fob Niag Falls, N. Y., lump per lb 5.88c; lots 6.38c; less 6.88c. Spot up

Siminal: (Approx. 20% each Mn, Al) Contract, freight not ceeding St. Louis rate allowed, lb alloy; carlots 8c; ton lots 8.7 less-ton lots 9.25c.

Tungsten Metal Powder: Spot, less than 97%, $2.50-$2.60; frei allowed as far west as St. Louis.

Grainal: Vanadium Grainal No. 87.5c; No. 6, 60c; No. 79, 45c; fob Bridgeville, Pa., usual frei allowance.

Vanadium Pentoxide, technic grade: Fused, approx. 89-92% V_2O_5 and 5.84% NA_2O; or air dried, 85% V_2O_5 and 5.15% NA_2O, $1. per lb contained V_2O_5, fob pla freight allowed on quantities of lb and over to St. Louis.

OPEN MARKET PRICES, IRON AND STEEL SCRA

Following prices are quotations developed by editors of STEEL in the various centers. Quotations are on gross tons.

PHILADELPHIA:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$18.75
No. 2 Heavy Melt. Steel	18.75
No. 2 Bundles	18.75
No. 3 Bundles	16.75
Mixed Borings, Turnings	13.75
Machine Shop Turnings	13.75
Billet, Forge Crops	23.75
Bar Crops, Plate Scrap	21 25
Cast Steel	21.25
Punchings	21.25
Elec. Furnace Bundles	19.75
Heavy Turnings	18.25
Chemical Borings	16.51

Cast Iron Grades
(Fob Shipping Point)

Heavy Breakable Cast	20.00
Charging Box Cast	21.00
Cupola Cast	25.00
Unstripped Motor Blocks	20.00
Malleable	24.00

NEW YORK:
(Dealers' buying prices)

No. 1 Heavy Melt. Steel	$15.33
No. 2 Heavy Melt. Steel	15.33
No. 2 Hyd. Bundles	15.33
No. 3 Hyd. Bundles	13.33
Chemical Borings	14.33
Machine Turnings	10.33
Mixed Borings, Turnings	10.33
No. 1 Cupola	25.00
Charging Box, Cast	21.00
Heavy Breakable, Cast	20.00
Unstripped Motor Blocks	20.00
Stove Plate	23.50

BOSTON:
(Fob shipping points. Boston differential 99c higher, steelmaking grades; Providence, $1.09 higher)

No. 1 Heavy Melt. Steel	$14 06
No. 2 Heavy Melt. Steel	14.06
No. 1 Bundles	14.06
No. 2 Bundles	14.06
No. 1 Busheling	14.06
Machine Shop Turnings	9.06
Mixed Borings, Turnings	9.06
Short Shovel Turnings	11.06
Chemical Borings	13 31
Low Phos Clippings	16 56
No. 1 Cast	25.00
Clean Auto Cast	27.00
Stove Plate	23.50
Heavy Breakable Cast	20.00

BUFFALO:
(Delivered consumers' plant)

No. 1 Heavy Melt. Steel	$19.25
No. 2 Heavy Melt. Steel	19.25
No. 1 Bundles	19.25
No. 2 Bundles	19.25
No. 1 Busheling	19.25
Machine Turnings	14.25
Short Shovel Turnings	16.25
Mixed Borings, Turn.	14.25
Cast Iron Borings	15 25
No. 1 Cast	25.00
Low Phos. Plate	21.75

PITTSBURGH:
(Delivered consumers' plant)

Railroad Heavy Melting	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
No. 2 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Mach. Shop Turnings	15.00
Mixed Borings, Turnings	15 00
No. 1 Cupola Cast	*25.00
Heavy Breakable Cast	*19.50
Stove Plate	*23.00
Cast Iron Borings	16.00
Billet, Bloom Crops	25.00
Sheet Bar Crops	22.50
Plate Scrap, Punchings	22.50
Railroad Specialties	24.50
Scrap Rail	21.50
Axles	26.00
Rail 3 ft. and under	23.50
Railroad Malleable	22.00

* Shipping point.

CLEVELAND:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp Bundles	19.50
No. 1 Busheling	19.50
Mach. Shop Turnings	14.50
Short Shovel Turnings	16.50
Mixed Borings, Turnings	14 50
No. 1 Cupola Cast	25.00
Heavy Breakable Cast	20.00
Cast Iron Borings	13.50-14.00
Billet, Bloom Crops	24.50
Sheet Bar Crops	22.00
Plate Scrap, Punchings	22.00
Elec. Furnace Bundles	20.50

VALLEY:
(Delivered consumer's plant)

No. 1 R.R. Heavy Melt.	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
Short Shovel Turnings	17 00
Cast Iron Borings	16.00
Machine Shop Turnings	15.00
Low Phos. Plate	22.50

MANSFIELD:
(Delivered consumer's plant)

Machine Shop Turnings	$15.00

CINCINNATI:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19 50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp. Bundles	19.50
Machine Turnings	10.50-11.00
Shoveling Turnings	12.50-13.00
Cast Iron Borings	11.50-12.00
Mixed Borings, Turnings	10.50-11 00
No. 1 Cupola Cast	25.00
Breakable Cast	17.75
Low Phos. Plate	21.00-22.00
Scrap Rails	20.50-21 00
Stove Plate	23.50

DETROIT:
(Delivered consumer's plant)

Heavy Melting Steel	$17.32
No. 1 Busheling	17.32
Hydraulic Bundles	17.32
Flashings	17.32
Machine Turnings	12.32
Short Shovel, Turnings	14.32
Cast Iron Borings	13.32
Low Phos. Plate	19 82
No. 1 Cast	25.00
Heavy Breakable Cast	20.00

CHICAGO:
(Delivered consumer's plant; cast grades fob shipping point; railroad grades fob tracks)

No. 1 R.R. Heavy Melt.	$19.75
No. 1 Heavy Melt. Steel	18 75
No. 2 Heavy Melt. Steel	18.75
No. 1 Ind. Bundles	18 75
No. 2 Dlr. Bundles	18.75
Baled Mach. Shop Turn.	18 75
No. 3 Galv. Bundles	16.75
Machine Turnings	13.75
Mix. Borings, Sht. Turn.	13.75
Short Shovel Turnings	15.75
Cast Iron Borings	14.75
Scrap Rails	20.25
Cut Rails, 3 feet	22 25
Cut Rails, 18-inch	23.50
Rerolling Rails	22.25
Angles, Splice Bars	22.25
Plate Scrap, Punchings	21.25
Railroad Specialties	22 75
No. 1 Cast	25.00
R.R. Malleable	22.00

ST. LOUIS:
(Delivered consumer's plant; cast grades fob shipping point)

Heavy Melting	$17.50
No. 1 Locomotive Tires	21.00
Misc. Rails	19.00
Railroad Springs	22.00
Bundled Sheets	17.50
Axle Turnings	17.00
Machine Turnings	10.50
Shoveling Turnings	12.50
Rerolling Rails	21.
Street Car Axles	24.
Steel Rails, 3 ft.	21.
Steel Angle Bars	21.
No. 1 Cast Iron Wheels	22.
No. 1 Cupola Cast	25.
Charging Box Cast	21.
Railroad Malleable	22.
Breakable Cast	17.
Stove Plate	23.
Grate Bars	15.
Brake Shoes	15.

BIRMINGHAM:
(Delivered consumer's plant)

Billet Forge Crops	$22.
Structural, Plate Scrap	19.
Scrap Rails Random	18.
Rerolling Rails	20.
Angle Splice Bars	20.
Solid Steel Axles	24.
Cupola Cast	25.
Stove Plate	23.
Long Turnings	11
Cast Iron Borings	13.
No. 1 Cast Iron Wheels	22.

LOS ANGELES:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.
No. 2 Heavy Melt. Steel	13.
No. 1, 2 Dlr. Bundles	12.
Machine Turnings	5.
Mixed Borings, Turnings	5.
No. 1 Cast	25.

SAN FRANCISCO:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$17.
No. 2 Heavy Melt. Steel	17.
No. 1 Busheling	17.
No. 1, No. 2 Bundles	17.
No. 3 Bundles	9.
Machine Turnings	7.
Billet, Forge Crops	15.
Bar Crops, Plate	15.
Breakable Cast	17.
Cut, Structural, Plate 1 ft and under	18.
Alloy-free Turnings	7.
Tin Can Bundles	14.
Iron, Steel Axles	24.
No. 2 Cast Steel	20.
Uncut Frogs, Switches	18.
Scrap Rails	18.
Locomotive Tires	20.

SEATTLE:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.
No. 2 Heavy Melt. Steel	14.
Heavy Railroad Scrap	15.

(Fob shipping point)

No. 1 Cupola Cast	25.

NONFERROUS METAL PRICES

er: Electrolytic or Lake from producers in ts 14.37½c, del. Conn.; less carlots 14.50c, ry. Dealers may add ¾c for 5000 lb to ad; 1c, 1000-4999 lb; 1½c, 500-999 lb; 2c, lb. Casting, 14.12½c, refinery, 20,000 more; 14.37½c, less than 20,000 lb.

Ingot: 85-5-5-5 (No. 115) 15.50c; 88-10-2 215) 18.75c; 80-10-10 (No. 305) 18.25c; yellow (No. 405) 12.50c; carlot prices, ling 25c per 100 lb freight allowance; ¼c for less than 20 tons.

Prime western 8.25c, select 8.35c, brass il 8.50c, intermediate 8.75c, E. St. Louis; grade 9.25c, del., carlots. For 20,000 carlots add 0.15c; 10,000-20,000 lb 0.25c; 10,000 lb 0.4c; under 2000 lb 0.50c.

Common 8.10c, chemical 8.20c, corrod- 8.20c, E. St. Louis for carlots; add 5 for Chicago, Minneapolis-St. Paul, Mil- ee-Kenosha districts; add 15 points for land - Akron - Detroit area, New Jersey, York state, Texas, Pacific Coast, Rich- , Indianapolis-Kokomo; add 20 points for ngham, Connecticut, Boston - Worcester, gfield, New Hampshire, Rhode Island.

ary Aluminum: 99% plus, ingots 15.00c pigs 14.00c del.; metallurgical 94% min. c del. Base 10,000 lb and over; add ½c 9999 lb; 1c less through 2000 lb.

dary Aluminum: Piston alloy (No. 122 12.75c; No. 12 foundry alloy (No. 2) 12.87½c; steel deoxidizing grades, notch granulated or shot: Grade 1 (95-97½%) ½c; grade 2 (92-95%) 13.25c; grade 3 2%) 12.00c; grade 4 (85-90%) 11.37½c. e prices for 30,000 lb or more; add ¼c 0-30,000 lb; ½c 5000-10,000 lb; ¾c 1000- lb; 1¼c less than 1000 lb. Prices include nt at carload rate up to 75c per 100 lb.

esium: Commercially pure (99.8%) stand- ingots (4-notch, 17 lb) 20.50c per lb, car- 22.50c 100 lb to c.l. Extruded 12-in. sticks c, carlots; 29.50c 100 lb to c.l.

Prices ex-dock, New York in 5-ton lots. 1 cent for 2240-11,199 lb, 1½c 1000-2239, 500-999, 3c under 500. Grade A, 99.8% gher (includes Straits), 52.00c; Grade B, or higher, not meeting specifications Grade A, with 0.05% max. arsenic, ½c; Grade C, 99.65-99.79% incl. 51.62½c; e D, 99.50-99.64% incl., 51.50c; Grade 9-99.49% incl. 51.12½c; Grade F, below (for tin content), 51.00c.

nony: American bulk carlots fob Laredo, 99.0% to 99.8% and 99.8% and over but eeting specifications below, 14.50c; 99.8% ver (arsenic, 0.05% max.; other impuri- 0.1% max.) 15.00c. On producers' sales ¼c for less than carload to 10,000 lb; r 9999-224 lb; and 2c for 223 lb and less; les by dealers, distributors and jobbers ½c, 1c, and 3c, respectively.

el: Electrolytic cathodes, 99.5%, fob re- 35.00c lb; pig and shot produced from olytic cathodes 36.00c; "F" nickel shot got for additions to cast iron, 34.00c.

ury: Open market, spot, New York, $98- per 76-lb flask.

ic: Prime, white, 99%, carlots, 4.00c lb.

ium-Copper: 3.75-4.25% Be, $14.75 per lb ined Be.

ium: Bars, ingots, pencils, pigs, plates, slabs, sticks, and all other "regular" ht or flat forms $1.25 lb, del.; anodes, discs and all other special or patented s, $1.30.

t: 97-99%, $1.50 lb, for 550 lb (bbl.); lb for 100 lb (case); $1.57 lb under .

U. S. Treasury, $35 per ounce.

m: 99.9%, $2.25 per troy ounce.

: Open market, N. Y. 90.12½c per ounce.

um: $81.50 per ounce.

Palladium: $24 per troy ounce.

Iridium: $125 per troy ounce.

Rolled, Drawn, Extruded Products

(Copper and brass product prices based on 14.37½c, Conn., for copper. Freight prepaid on 100 lb or more.)

Sheet: Copper 25.81c; yellow brass 23.67c; commercial bronze, 95% 26.14c, 90% 25.81c; red brass, 85% 24.98c, 80% 24.66c; best quality 24.38c; phosphor bronze, grade A 4% or 5%, 43.45c; Everdur, Duronze or equiv., hot rolled, 30.88c; naval brass 28.53c; manganese bronze 31.99c; muntz metal 26.78c; nickel silver 5% 32.38c.

Rods: Copper, hot rolled 22.16c, cold drawn 23.16c; yellow brass 18.53c; commercial bronze, 95% 25.83c, 90% 25.50c; red brass, 85% 24.67c; 80% 24.35c; best quality 24.07c; phosphor bronze, grade A 4% or 5% 43.70c; Everdur, Duronze or equiv. cold drawn, 29.82c; naval brass 22.59c; manganese bronze 25.93c; muntz metal 22.34c; nickel silver 5% 34.44c.

Seamless Tubing: Copper 25.85c; yellow brass 26.43c; commercial bronze 90% 28.22c; red brass 85% 27.64c, 80% 27.32c; best quality brass 26.79c; phosphor bronze, grade A 5% 44.70c.

Copper Wire: Bare, soft, fob eastern mills, carlots 19.89c, less carlots 20.39c; weatherproof, fob eastern mills carlot 22.07c, less carlots 22.57c; magnet, delivered, carlots, 23.30c, 15,000 lb or more 23.55c, less carlots 24.05c.

Aluminum Sheets and Circles: 2s and 3s flat mill finish, base 30,000 lb or more del.; sheet widths as indicated; circle diameter 9" and larger:

Gage	Width	Sheets	Circles
.249"-7	12"-48"	22.70c	25.20c
8-10	12"-48"	23.20c	25.70c
11-12	26"-48"	24.20c	27.00c
13-14	26"-48"	25.20c	28.50c
15-16	26"-48"	26.40c	30.40c
17-18	26"-48"	27.90c	32.90c
19-20	24"-42"	29.80c	35.30c
21-22	24"-42"	31.70c	37.20c
23-24	3"-24"	25.60c	29.20c

Lead Products: Prices to jobbers; full sheets 11.25c; cut sheets 11.50c; pipe 9.90c, New York, 10.00c Philadelphia, Baltimore, Rochester and Buffalo, 10.50c Chicago, Cleveland, Worcester and Boston.

Zinc Products: Sheet fob mill, 13.15c, 36,000 lb and over deduct 7%. Ribbon and strip 12.25c, 3000-lb lots deduct 1%, 6000 lb 2%, 9000 lb 3%, 18,000 lb 4%, carloads and over 7%. Boiler plate (not over 12") 3 tons and over 11.00c; 1-3 tons 12.00c; 500-2000 lb 12.50c; 100-500 lb 13.00c; under 100 lb 14.00c. Hull plate (over 12") add 1c to boiler plate prices.

PLATING MATERIALS

Chromic Acid: 99.75%, flake, del., carloads 16.25c; 5 tons and over 16.75c; 1-5 tons 17.25c; 400 lb to 1 ton 17.75c; under 400 lb 18.25c.

Copper Anodes: In 500-lb lots, fob shipping point, freight allowed, cast oval over 15 in., 25.125c; curved, 20.375c; round oval straight, 19.375c; electro-deposited, 18.875c.

Copper Carbonate: 52-54% metallic Cu, 250 lb barrels 20.50c.

Copper Cyanide: 70-71% Cu, 100-lb kegs or bbls 34.00c, fob, Niagara Falls.

Sodium Cyanide: 96%, 200-lb drums 15.00c; 10,000-lb lots 13.00c fob Niagara Falls.

Nickel Anodes: 500-2999 lb lots; cast and rolled carbonized 47.00c; rolled depolarized 48.00c.

Nickel Chloride: 100-lb kegs or 275-lb bbls 18.00c lb, del.

Tin Anodes: 1000 lb and over 58.50c del.; 500-999 59.00c; 200-499 59 50c; 100-199 61.00c.

Tin Crystals: 400 lb bbls 39.00c fob Grasselli, N. J.; 100-lb kegs 39.50c.

Sodium Stannate: 100 or 300-lb drums 36.50c, del.; ton lots 35.50c.

Zinc Cyanide: 100-lb kegs or bbls 33.00c fob Niagara Falls.

Scrap Metals

Brass Mill Allowances: Prices for less than 15,000 lb fob shipping point. Add ⅝c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	12.000	12.000	11.250
Yellow brass	9.875	9.625	9.125
Commercial bronze			
95%	11.250	11.000	10.500
90%	11.125	10.875	10.375
Red brass			
85%	10.875	10.625	10.125
80%	10.875	10.625	10.125
Best quality (71-79%)	10.500	10.250	9.750
Muntz metal	9.250	9.000	8.500
Nickel silver, 5%	10.500	10.250	.....
Phos. br., A, B, 5%	12.750	12.500	11.500
Naval brass	9.500	9.250	8.750
Manganese bronze	9.500	9.250	8.750

Other than Brass Mill Scrap: Prices apply on material not meeting brass mill specifications and are fob shipping point; add ¾c for shipment of 60,000 lb of one group and ½c for 20,000 lb of second group shipped in same car. Typical prices follow:

(Group 1) No. 1 heavy copper and wire, No. 1 tinned copper and copper borings 11.50c; No. 2 copper wire and mixed heavy copper, copper tuyeres 10.50c.

(Group 2) Soft red brass and borings, aluminum bronze 10.75c; copper-nickel solids and borings 11.00c; lined car boxes, cocks and faucets 9.50c; bell metal 17.25c; babbitt-line brass bushings 14.75c.

(Group 3) Admiralty condenser tubes, brass pipe 8.75c; muntz metal condenser tubes 8.25c; old rolled brass 8.25c; manganese bronze solids; (lead 0%-0.40%) 8.00c; (lead 0.41%-1%) 7.00c; manganese bronze borings, 7.25c.

Aluminum Scrap: Price fob point of shipment, truckloads of 5000 pounds or over; Segregated solids, 2S, 3S, 5c lb, 11, 14, etc., 3 to 3.50c lb. All other high grade alloys 5c lb. Segregated borings and turnings, wrought alloys, 2, 2.50c lb. Other high-grade alloys 3.50c, 4.00c lb. Mixed plant scrap, all solids, 2, 2.50c lb borings and turnings one cent less than segregated.

Lead Scrap: Prices fob point of shipment. For soft and hard lead, including cable lead, deduct 0.75c from basing point prices for refined metal.

Zinc Scrap: New clippings 7.25c, old zinc 5.75c, fob point of shipment, add ½c for 10,000 lb or more. New die cast scrap 4.95c, radiator grilles 4.95c, add ½c for 20,000 lb or more. Unsweated zinc dross, die cast slab 5.80c, any quantity.

Nickel, Monel Scrap: Prices fob point of shipment; add ½c for 2000 lb or more of nickel or cupro-nickel shipped at one time and 20,000 lb or more of monel. Converters (dealers) allowed 2c premium.

Nickel: 98% or more nickel and not over ½% copper 23.00c; 90-98% nickel, 23.00c per lb nickel contained.

Cupro-nickel: 90% or more combined nickel and copper 26.00c per lb contained nickel, plus 8.00c per lb contained copper; less than 90% combined nickel and copper 26.00c for contained nickel only.

Monel: No. 1 castings, turnings 15.00c; new clipping 20.000c; solder sheet 18.00c.

INGALLS STEEL
Goes Round the World

Matson Lines' *Sea Centaur*, nosing out to sea via the Golden Gate Bridge, makes a perfect picture of Ingalls steel in action. The 17,000-ton all-welded passenger-cargo ship (built by Ingalls), as well as the approaches to the famous bridge, are of Ingalls steel—known and used round the world. We invite your inquiries.

INGALLS
STEEL

THE INGALLS IRON WORKS COMPANY, THE INGALLS SHIPBUILDING CORPORATION, The Steel Construction Company, Birmingham Tank Company. Offices at BIRMINGHAM, New York, Pittsburgh and New Orleans. Fabricating plants at Birmingham and Pittsburgh. Shipyards at Pascagoula, Miss., and Decatur, Ala.

Sheets, Strip . . .

Producers unable to estimc closely either fourth-quart rated tonnage or total pr duction

Sheet & Strip Prices, Page 156

New York — Sheet sellers find the selves still far from being able to m any close approximation of what t will be called upon to supply in the cl ing months of the year in the way rated tonnage. Rated business is coming through in considerable volu and, as a further complication, a num of these rated orders are still com through from buyers who are not regu customers. Such orders are being turned, but in a number of instances question of having to supply tonnages volved is still not settled, as consum are making further appeals to Washi ton.

Meanwhile, there are operating d ficulties at various producing pla which are making it difficult for p ducers to even estimate the amount carryover they are going to have at t end of this quarter. While producti stepped up sharply in July and Augu it is now tapering off again at certa plants because of shortage of raw m terials.

Seattle—Rolling mills are as n capacity as handicaps of scrap shorta and abnormal labor turnover will perm While mills are booked to the end the year, demand is so insistent that t entire 1947 production could be sold most immediately. No new business being accepted except in particular ca where regular customers must be acco modated or deliveries are extended o a long period.

Birmingham—Priority system is ca ing some confusion in sheets which being produced at virtual capacity in t district but still in insufficient quantity meet demands. The district's 260,0 ton annual capacity will be boosted about 500,000 tons with the changeo to the cold reduction method just a nounced by Tennessee Coal, Iron Railroad Co. The two-year program considered a great potential boost for t sheet situation here, always one of t tightest in steel specifications.

Cincinnati—Sheet mills are trying fit into schedules the priority orders cently filed for fourth quarter rollin The effect on other customers has n yet been accurately defined, but it certain the carryover into next year w be heavy.

St. Louis—Sheet production in this d trict is increasing. Granite City Steel C principal producer, has completed lea arrangements for three DPC op hearths, which will equalize its pour and finishing capacity. One furnace h started operation and the other two a to begin by the end of October and p sibly sooner. These are in addition the four open hearths the company ow Carryover on both hot and cold-roll sheet orders is expected to run throu the first quarter with little likelihood any open space before the latter part the second. No new business will be a cepted until Jan. 1. Few cancellatio have been received, although there ha been occasional specification chang

rences given steel for railroad cars housing on old orders may make ery of some steel now on the sched- more than nine months late.

tsburgh — Nearly 195,000 tons of 210,000-ton total of rated steel ton- that has been approved for the quarter to date represents sheets. only is bulk of rated orders for s, but most of this tonnage is sched- for October delivery. One interest very little unrated galvanized ton- will be shipped next quarter. While 25 per cent of its cold-rolled sheet it will be for preference orders, mill customers may have to cur- operations next quarter because of a tion in their steel allotments due e fact that a considerable tonnage ted orders must be given preferred ion on mill schedules. In addition CC" rated tonnage, mills expect an asing number of directives resulting hardship cases. Producers say it is ssible to give any of their customers ite delivery promises as long as ll requirements represented by ratings and directives are not defi- established. This situation pro- many metalmaking companies setting up realistic production ules.

iladelphia — Sheet sellers continue eive a large volume of rated orders, bstantial portion of which is from mers with whom they had never ously done business. Consequently, business is not being entered, al- h it continues to hang over the mar- Producers also comment upon the ual size of a number of the rated or- that are being received from regu- stomers. In certain instances, these s for fourth quarter delivery in- more tonnage than specified for rst three quarters combined. Some cers believe that they will have ng left for quotas originally ed for their unrated customers. is especially true in galvanized , practically all of which is going housing.

el Bars . . .

nbalanced inventories of hot- lled bars restrict cold finish- g operations. Carryover to heavy

Bar Prices, Page 156

sburgh—Cold finishing operations n well below capacity due to un- ed inventories of hot-rolled bars. interest reports inability to make eadway against order backlogs due tricted output which is estimated out 70 per cent of capacity. No gs in production schedules are ble through remainder of this year, n smaller sizes some interests are d through first quarter. A num- f customers have submitted orders r ahead. Heavy demand is noted all sources although heaviest re- nents fall within the size range of and under. Mills have not yet d books for first quarter schedul- nd are not expected to until they a clearer indication of the amount ed tonnage they must schedule for quarter and extent of probable ver tonnage. No appreciable rated

Production Screwdrivers

Speed up

YOUR SCREWDRIVING ASSEMBLIES BY USING THESE MACHINES

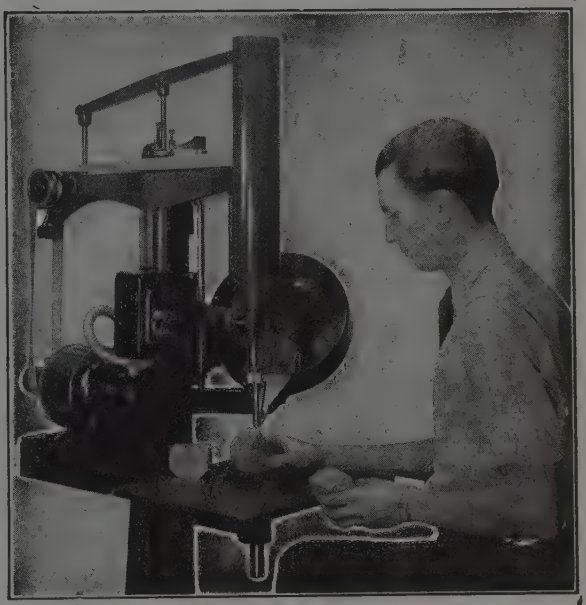
Model B Will Drive Screws from No. 6 to No. 1/4, in Lengths 3/16 to 1 1/2 Inches

●

All Screws Driven to a Uniform Tension

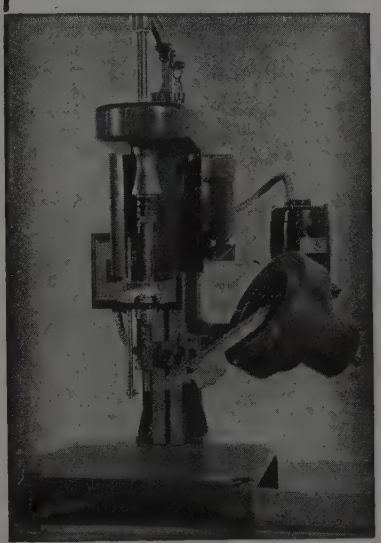
●

No Marring of Heads



MODEL B

MODEL A



Model A Is Designed to Handle Small Screws in Sizes From No. 2 to No. 6 In Lengths From 3/16" to 3/4".

●

Driving Time One Second Per Screw

●

Send Sample Assemblies for Production Estimates and Quotations

ASK FOR CATALOGUE

Detroit Power Screwdriver Co.

2813 W. Fort St., Detroit 16, Mich.

tonnage has been placed with mills to date. Mill carryover tonnage into fourth quarter is expected to represent about two months' output on an average. Shipments on alloy bars are available for late October and November.

St. Louis—Demand for merchant bars continues unchanged at the high level reached three months ago. Production, after reaching what was regarded as peacetime capacity, is beginning to feel the effects of shortages in magnesium, zinc and tin, as well as scrap and pig iron. The latter two have not been critically scarce in mills in this district. Drawers still are uncertain of schedules, but they are virtually sure of a carryover through the first half of next year. New orders are being accepted reluctantly and on a mill-convenience delivery basis. The directive on capacity carloading still complicates shipment schedules forcing further delay in deliveries of the smaller orders.

Chicago — Light carbon bars hold a position second to sheets and strip as regards tightness and deferred deliveries. Return of the use of priorities in fourth quarter complicates the supply problem for the user lacking preferential position and there is widespread fear that priority tonnage will force mills to reduce shipments of steel under quotas. Instances are heard where manufacturing plants operate one shift every other week because of interrupted steel deliveries. One local barmaker has opened books for first half of next year, and in establishing quotas—lower than at present—taken into account the present large c ryover and figured so that estimated c ryover at next midyear should not be o one month.

Philadelphia — Hot carbon bar p ducers, especially now that agricultu equipment requirements no longer t take preference in the fourth quarter, receiving only a modest amount of ra tonnage for that period. However, i almost impossible for buyers to pl new tonnage for shipment over the mainder of this year, because of the ders already on mill books. As a m ter of fact, hot carbon bar sellers gen ally are far oversold for this year, es cially on 1½ inch and smaller si Much of the same situation also prev in cold-drawn carbon bars. Hot cold alloy bars are still available in g volume for this year.

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Steel Plates . . .

Sellers restrict new bookin to rated tonnages in effort catch up on arrearages

Plate Prices, Page 157

New York—With backlogs run well into next year, despite the fact some leading producers have not fo ally opened their books for next y plate mills are accepting little ton apart from rated specifications. He with practically all sellers many w behind on current commitments, n activity is being directed toward get caught up on arrearages; and at pre they are making little headway, espe ly in view of continued shortages in s and pig iron.

Tank fabricators, in turn, are be on their schedules because of dela pig shipments, with the majority un to accept new orders for shipment w in the next 12 months.

The major portion of bookings, p fabricators declare, is for industrial w There has been a particularly heavy mand for weeks past from manufact of rayon and plastics, and there has substantial increase in demand also storage silos and bins for installatio connection with conveying equipme meet labor saving requirements.

Pittsburgh—Fabricators have been able to make much headway against record backlogs due to continued de in plate supply. Until nearly dep fabricators' inventories can be augme miscellaneous tank, railroad car barge construction will remain well hind schedules. However, increased nage of plates is expected to be n neled into freight car construction repair programs through remainde this year as result of CPA's reque meet urgent needs of the carriers. all plate demand has held up excepti ly well since the end of the war. producers have no openings in r schedules until well into first qu

Birmingham—Plate commitment falling slightly behind schedules d the overall demand for steel pro which makes it impossible to give ferential treatment to plates for any stained period. A few limited boo for next year have been made.

Seattle—Many projects involving are pending and others are wit pending an easier supply. Materia

available in required tonnages, deliveries are slow and are becoming more certain due to the seamen's strike.

Port of Portland has awarded a contract at $472,500 to Northwest Marine Iron Works, Portland, for construction of a 186-foot stern wheel steel tug, requiring about 200 tons of plates.

Portland is studying tenders for a million-gallon elevated steel tank, completion date taking precedence over price. Pittsburgh-Des Moines Steel Co. is low, $114,827, completion in 12 months; American Pipe & Construction Co., Portland bid $117,529, completion in 9 months, and Chicago Bridge & Iron Co., $121.550, completion in 6 to 7 months.

Philadelphia — Already far behind on current commitments, plate sellers are moving cautiously in the acceptance of new tonnage. Certain leading producers still have not opened their books for next year and, being sold out for the remainder of this year, are entering no new business unless it is rated. On the other hand, some producers are booking selected tonnage for 1947, and one, as a result of this policy plus heavy arrearages, regards himself as practically out of the market for the first half of next year. While plate mills are receiving some rated business for the fourth quarter, it has not amounted to much thus far.

Wire . . .

Wire Prices, Page 157

Chicago—Inventories of wire and wire products are low and buyers' chief concern is essentially one of deliveries. Although the record harvest of crops is holding back the erection of fences, jobbers and jobbers press insistently for deliveries from fencemakers. Demand for bale ties is heavy; some quarters report requirements for ties suitable for baling paper and rags are more acute than for hay. The upholstery trade is buying for tacks. Railroad purchases of wire are increasing. Wiremakers are confronted with the problem of spreading out customer allocations thinly, with result that few are satisfied.

Tubular Goods . . .

Tubular Goods Prices, Page 157

Boston—For delivery to Dodge City, Kan., in the last quarter, 1947, and first quarter, 1948, Stone & Webster Engineering Corp., Boston, is asking bids with escalator clauses on 20,000 tons of carbon steel, grade B pipe, 4½ to 10¾-inch sizes. Pipe is for gas lines, Stanolind Oil & Gas Co., Tulsa, Oklahoma, installation in western Kansas. Pipe deliveries to distributors are slightly heavier, but demand is selective and little tonnage is going into inventories. Mills take light tonnages beyond jobber quotas and are filled up into next year on a month-to-month basis.

Seattle—Cast iron pipe sellers report increased demand but this is attributed to their inability to promise definite deliveries. The potential demand is sufficient to absorb a very large tonnage of pipe but many large projects are being withheld until production increases, transportation difficulties are resolved, and deliveries can be guaranteed. Vancouver, B. C., is considering bids for 300 tons, various sizes, and the award may be made on the basis of delivery rather than

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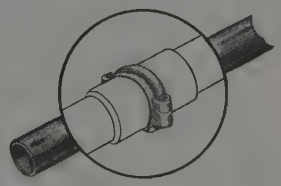

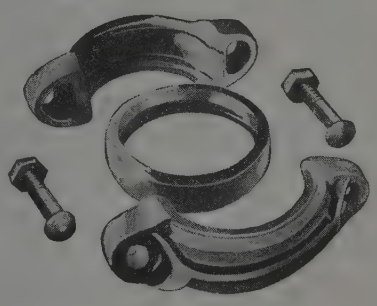

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Structural Shapes . . .

Structural Shape Prices, Page 157

New York—Structural awards continue to decline, due largely to restrictions on nonhousing construction. Among the few outstanding awards is a lot of 1000 tons for a warehouse for the Danahy-Faxon Stores, Buffalo, placed through the Turner Construction Co., to Lehigh Structural Steel Co., Allentown, Pa. The New York City Board of Transportation is in the market for several hundred tons for subway platform construction in Brooklyn. Meanwhile construction operations in the metropolitan area have been disrupted by the trucking strike and also by rail embargoes resulting from both the trucking and seamen's strikes.

Boston—Structural steel contracts approximating 25,000 tons are being placed by two Boston contractors, including 17,000 tons, generator plant, General Electric Co., Schenectady, N. Y., by Stone & Webster Engineering Corp. This project will be partially welded. Telephone building, Boston, takes 8000 tons. New inquiry for smaller tonnages has slackened, affected by tightening of authorizations on nonhousing projects, but there is no easing in pressure on structural mills, generally filled well through first quarter with carryover heavy. Deliveries on new fabricated steel contracts extend into April; backlogs with the two major fabricating interests are heavy.

Chicago — Activity in structural fabricating is severely limited by shorta of shapes. Deliveries from mills are sl and are holding back work in progr Volume also is below quotas, with res that fabricators are not interested in t ing on new work. Reflecting this a the government restrictions, new quiries for building construction h fallen to a low level.

Philadelphia — Shape product sagged last week as a result of a sh age in scrap, resulting in additional rearages, which already are so he that producers see little chance of g ting caught up for several months. Me while, structural demand is declining, a result of tightening restrictions on n housing construction. Certain proje on which bids had been taken have b held up indefinitely, including a 40 ton addition to an eastern Pennsylva steel mill and a somewhat smaller t nage for a metalworking plant addit in the same district. However, a scattered jobs are being placed, hav received CPA approval, including tons for Spicer Mfg. Corp.'s Pa Pressed Steel Co., Reading, Pa., pla with Belmont Iron Works, Eddyst Pa., and 325 tons, addition, Du P plant, Edge Moore, Del., placed w Bethlehem Fabricators, Bethlehem,

Inquiry includes 1300 tons, ste electric generating station, Warren, with plans being issued by Gilbert A ciates, Reading, Pa.; 180 tons, s bridge, Montgomery county, Penn vania, on which J. F. Keelor, Perkiom ville, Pa., general contractor, is low; stated tonnage, Paulsboro Mfg. Co., S derton, Pa., on which the Ballinger Philadelphia, is the architect. Bids w opened Sept. 16 on 420 tons for a s bridge in Northumberland county, Pe sylvania, and 125 tons for another Carbon county, Pennsylvania.

Birmingham — Pressure for sha while probably not as great as for sh and plates, has increased somewhat the past few weeks, although build operations, except for general rep and modernization of a comparati moderate size, are being held at a m mum. Mills expect a new rush for sha by the turn of the year.

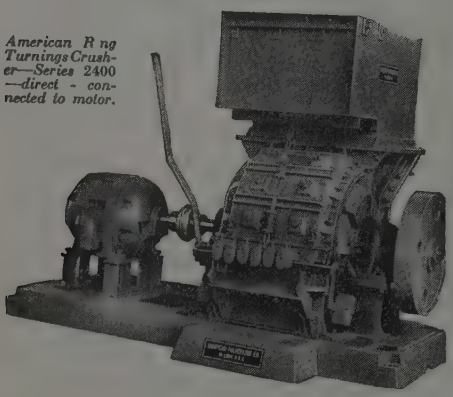
Seattle — Fabricators report a tinued tight supply of steel and are t ing down business. Allocations are under normal requirements and pre indications are that ample relief will be at hand for at least six months. liveries continue unsatisfactory and be aggravated by the shipping sh even if it is not of long duration. Po tial industrial demand for shapes i major proportions but the governm moratorium on new awards is restric the volume of new business. Fabrica are accepting only small orders base the amount of steel on hand and are making definite delivery promises. I cative of conditions, Washington received no bids last week for a gi bridge in Wahkiakum county.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 157

Chicago — Reinforcing activity tinues to drift to lower levels, supp being so short of steel they shy a from even the most attractive inqui Some interests, far in arrears in mill s ments under quotas, are heavily o committed and freely admit they not interested in taking new business

TURNINGS REDUCED BY AMERICAN CRUSHERS INCREASE CUTTING OIL RECLAMATION



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after Jan. 1. Largely due to steel rcity, and further cuts by the gov- ment in approvals for commercial nstruction numerous projects are be- deferred.

Boston — Substantial tonnage of rein- cing steel is going begging, contractors ing unable to find a seller. Stocks and otas to distributors are small and in- equate and, with production sharply rtailed, prospects for improved supply not bright. Delays in bridge and ghway work are partly due to lack of ncrete reinforcing bars. Sellers are oking small lots, husbanding supply sight, but are reluctant to commit emselves on larger tonnages over an tended period.

New York—Approximately 2500 tons reinforcing steel are required for the nes Weldon Johnson houses, a muni- al housing authority project, with ilaka Construction Co. Inc., 11 East th Street, this city, low on the general ntract. This tonnage is outstanding in rather dull reinforcing bar market. siness is restricted by curbs on non- using construction and by difficulty in taining steel and other materials. Some nforcing steel distributors assert their rces of supply have all but dried up, l ascribe this situation largely to the k of profit in the production of this n, combined with freight absorption various instances.

Pittsburgh—Most sellers are operating der substantially restricted production otas and some are not accepting new lers because their mills are booked idly through rest of this year. Until oducers can more clearly determine ent of year-end carryover tonnage, lers are not expected to open books first quarter tonnage scheduling. Some ls are accepting forward orders, but most instances are not specifying even tative delivery dates. As long as con- te bars remain a "loss" item, there little prospect overall output will be stantially increased. Mills find it ch more profitable to concentrate on duction of carbon bars, thus leaving tively little opening on bar mill edules. Many construction programs being held up indefinitely because of present dearth of reinforcing bars. nsiderable export tonnage also is seek- placement with little success.

g Iron . . .

Many small foundries being forced to reduce melt or close down due to inability to get pig iron or coke

Pig Iron Prices, Page 159

New York—While rail embargoes aris- from the truck and water strikes e greatly restricted pig iron shipments, t consumers in the metropolitan area e enough iron on hand to carry them the remainder of the month. How- , a number of plants will be forced n before then for the want of coke. fact, certain foundries late last week e not planning to operate this week this reason.

oundries in the Brooklyn area appear e particularly hard hit not only be- se the embargo restricts shipments carlots for delivery only to such ts as have sidings, but because of lighterage, which recently was brought to a standstill as a result of a decision of tugboat crews to walk out in sympathy with the striking seamen's union.

Most pig iron consumers in this district are experiencing further restrictions, as they are unable to obtain certificates for pig iron. This is due to the fact that these foundries are not engaged in work for the housing program or in the manufacture of railroad brake shoes, for which certificates are provided. Farm machinery also has been taken from the preference list, and while only few foundries in this district were engaged in the manufacture of castings for this equipment, these will be unable to obtain preference tonnage. Meanwhile the present certificate plan which was to have expired at the end of this moth, has been extended for the remainder of the year.

Pittsburgh—Direction 13 to M-21, amended Sept. 6, extends CPA's pig iron certified tonnage program through fourth quarter. The new program excludes agricultural equipment manufacturers from the preferred list. Exclusion of agricultural equipment items is not expected to result in any significant reduction in certified tonnage shipments next quarter for this group has not taken much tonnage on this basis. It is estimated that 185,000 tons of foundry and malleable iron will be shipped this month as certified tonnage, equivalent to about 50 per cent of total output. A regulation outlining the exact terms of NHA's pig iron subsidy progress is ex-

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peced soon. Increased output of 90,000 tons monthly is expected to result from this program.

Chicago — Demand for pig iron continues distressingly acute. Most foundries are without appreciable inventories and, therefore, depend upon arrival of shipments for maintenance of operations. Demand for cast products shows no lessening, and the outlook for an increase in iron production is not promising, a situation which will persist so long as steel plants are desperately short of scrap and must use maximum amounts of hot metal to hold their steelmaking rate. One ray of sunshine in an otherwise drab picture is OPA's announcement that cast scrap price ceilings are to be increased, an action that may result in foundries getting a better supply of scrap. However, cast scrap has been short for many months, and the shortage may be actual, rather than due to an unfavorable price condition.

Philadelphia — Because of the large amount of certified orders, such as soil and pressure pipe and sanitary ware, pig iron melt in this district is expected to continue heavy. This likely will be the case, even though there is a shortage of coke, because suppliers are making a point of seeing that sufficient tonnage is available for housing and brakeshoe requirements. Filling of these rated orders will be at the expense of many foundries not engaged in certified production, with their operations restricted or, in some instances, suspended.

Boston—Extension of priority certifications through fourth quarter finds some additional pig iron consumers qualifying, although these are border-line cases. Production is up slightly, but distribution is badly snarled. Some foundries without ratings are down, others are reducing melt or are operating on a high ratio of scrap, where available. Short as scrap is, most foundries are worse off on iron. Steel works keep going on a hand-to-mouth supply. Pipe and malleable shops as well as a few gray iron producers have increased melt slightly. Overall deliveries to New England this month, and probably through fourth quarter, will be the lowest in years.

Cincinnati — Pig iron shipments are lighter this month to foundries not on priority work. The trend is in both northern and southern iron. Furnaces are trying to spread the available tonnage but the situation falls hard on small foundries which have exhausted inventories and are unable to rely in major degree on scrap. All iron stocks are so low that any hesitation in the flow, whatever the cause, would mean almost immediate check in the melt level.

Birmingham—Pig iron continues in alarming shortage and although merchant iron men hear talk of a premium price of around $8 per ton for all iron over and above regular quotas, the move would not mean much where additional output apparently is out of the question. The district is aware of its need for additional iron capacity, but expansion seems quite some distance in the future.

Buffalo — Demand for merchant iron continues to exceed available supplies, but surprise was noted among sellers over a slight easement for prompt deliveries because of varied labor reasons. One top midstate consumer notified the producer to pare this month's shipments as operations were not being pushed because of the uncertain labor outlook. An increased number of foundries also

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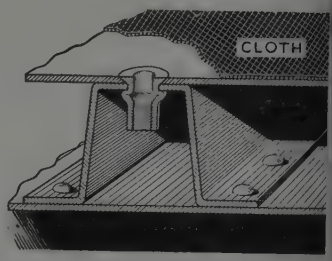

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that the labor shortage problem has rned to retard production schedules. ome instances, melters find the limit- abor supply as much a factor to con- l with as that of getting sufficient . Except for one high-cost furnace ch is idle, producers are of the opin- that the pig iron premium price plan ld have little effect in this area as t producers are operating at ca- ty.

on Ore . . .

Iron Ore Prices, Page 158

leveland—Shipments of Lake Superi- ron ore in August totaled 9,774,442 s tons compared with 10,731,804 in August, 1945, the Lake Superi- ron Ore Association reports. This was ecline of 957,362 tons, or 8.92 per , from the like period a year ago. adian mines accounted for 234,895 compared with 100,028 tons in ust, 1945, and in addition the United es total for August, 1945, includes 84 tons of Canadian ore.

ipments for the year to Sept. 1 ed 33,623,281 gross tons compared 51,128,672 tons for the like period st year, a decline of 17,505,391 tons, 4.24 per cent. Canadian mines shipped 743 tons compared with 348,860 during the same period a year ago in addition the United States total he 1945 period includes 212,208 tons Canadian ore.

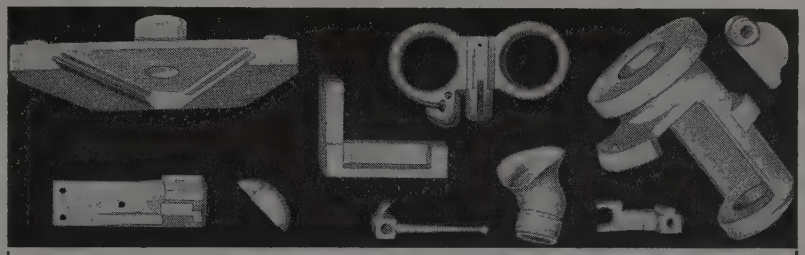
rap . . .

Government decision on prices nd distribution controls dis- ppoints both sellers and con- umers

Scrap Prices, Page 160

w York — Newly announced in- es in cast scrap are expected by leaders in the trade here to result ome improvements in shipments. e there is question as to how long improvement might last in view of small amount of cast scrap being aced, it is thought that collectors be tempted to concentrate more y on cast grades, and probably at xpense of steel scrap on which no ases in ceiling prices were permit- It is still too early to gage accu- the effect of unchanged price lules on the movement of steel General opinion is, however, that from some temporary increase the will not vary much from the rate iling just before shipments came to t a dead stop. Restrictions barring le of low phos and foundry grades asic open hearth consumption will own on the flow of this material the Pittsburgh district. A greater rtion of it in the future should into eastern Pennsylvania and cer- other seaboard consuming districts.

tsburgh — Reaction to OPA's scrap decision and supplementary regu- s was generally unfavorable among rs and brokers. Steel producers be- that a relatively insignificant ton- of scrap, held by dealers pending price decision, now undoubtedly be shipped, but it is too early to st to what extent the new regula- will encourage future collection



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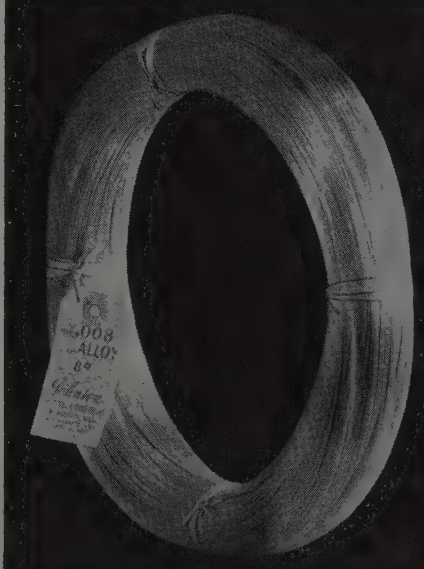

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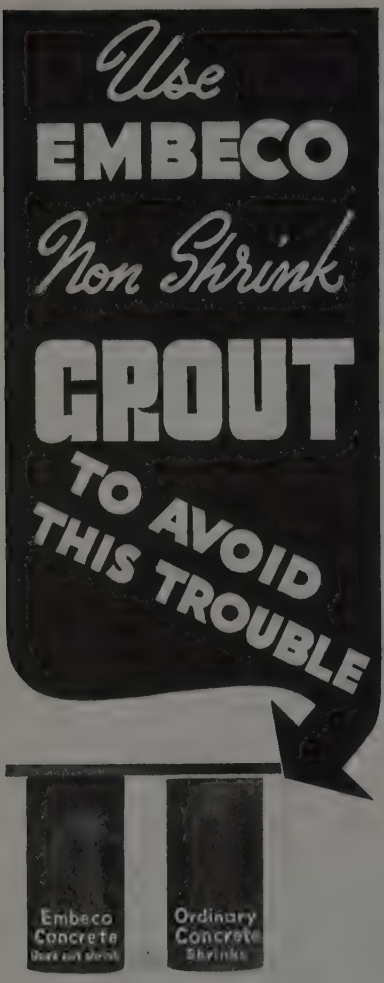

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and shipment of scrap to the mills.

Most dealers take the position that collection and preparation spread of $3.50 per gross tons is inadequate, particularly among the smaller interests that haven't modern processing equipment. They also state the 50-cent differential between dealers' and consumers' ceiling prices on unprepared material is not sufficient to stop direct sales to the consumers on a reciprocal basis. Tie-in sales are said to be nearly impossible to police. Fact processors of scrap now must balance shipments with receipts under CPA's inventory control will prevent further hoarding of scrap. However, those dealers taking a more pessimistic outlook state neither OPA or CPA can force them to sell what scrap they have on hand or to collect and process unprepared material at a loss.

Incentive increases, averaging about $4 a ton on cast scrap, should stimulate collection of this urgently needed material for the foundries. Another important feature of the new scrap regulation prohibits the use of electric furnace and foundry grades in basic open hearth operations unless it has been allocated by CPA.

Chicago — Considerable disappointment and gloom has resulted from the OPA announcement that except for cast scrap ceilings will continue unchanged. At the same time, the scrap trade and consumers of steel scrap are skeptical that any program to promote the flow of scrap short of higher prices can produce the results necessary to maintain steelmaking at full tilt during the next few months. On the other hand, there is some point gained in that OPA has finally spoken, thus removing uncertainty over prices. The action in giving cast scrap higher ceilings may well illustrate whether price is as important as some claim it to be. One difference, however, is that cast grades have been short for a much longer period than steelmaking grades, and hoarding may not be as much of a factor.

Cleveland—Steel mill interests as well as scrap sellers were greatly disappointed last week by provisions of OPA's scrap program. Consensus is that nothing constructive was accomplished toward stimulating the flow of material and that the program as a whole is contrary to recommendations made by the industry advisory committee. It is believed that establishment of ceiling prices on sales of unprepared scrap to dealers from industrial or government sources will reduce sharply the shipment of this type of material. Scrap interests claim that the margin of profit, if any, on most transactions is so small that there is no incentive to bring out supplies. The movement of scrap in this district is light with no prospects of improvement in the near future.

Seattle—Activity in the scrap market remains dull here. Unless heavier tonnages are forwarded steel mills may have to close before the end of this year. Inventories are being depleted gradually and the outlook is unfavorable for the mills which have unprecedented demand for all of their products. Local agencies which successfully conducted a campaign during the war to collect scrap are being reorganized to publicize the plight of the industry and to uncover dormant supplies. Similar campaigns are planned in other sections of the state and in Oregon.

Birmingham—Activity in scrap de yards here was confined last week the continued accumulation of mode tonnages. Refusal of OPA to lift ce prices, coupled with a labor shor and advent of inclement weather, further aggravate tightness of supp

Buffalo — Although the OPA's ref to increase ceilings on steelma grades of scrap met with consider disappointment and resentment an dealers, there was a lively resump in the movement of accumulated m rial. New buying was reported with one of the leading dealers acc ing a 10,000-ton order. Dealers at uted the immediate flurry in shipm to the fact that scrap has been held l for weeks in anticipation of higher pr and that shipments would again hit a ebb in about two to three weeks.

Many dealers bitterly criticized OPA's action, pointing out that grades needed a price incentive more than cast grades because the la had been selling on a $20 shipping p basis. Steel grades were not. D was also expressed that regulations c do away with reciprocal deals which completed verbally and are not r tioned in contracts. This area is rep ed to have shared in a recent deal w a consumer exchanged 15,000 ton scrap for 10,000 tons of pig iron. 5000-ton boatload of scrap from the luth area was reported during the w

Philadelphia — Scrap dealers, ke disappointed over OPA's action in re ing an appeal for higher prices, look little or no improvement in the flov this material. In fact some look f smaller movement than ever shortl steel grades. They point out that ing the interim period when OPA not operating and in the few w which immediately followed they more to collectors than they would l otherwise on the possibility of hi ceiling prices to consumers. Now are naturally starting to offer less they expect as a result that collect of merchant scrap will begin to dec possibly offsetting the slow but gra improvement in the volume of manu tured scrap.

In any event, the scrap trade looks a critical period this winter, with st virtually nil in many instances. trade approves certain regulations, cluding the restriction on the sale of phos and cast grades for basic open he production, and this will prove to advantage of some consumers in this trict who have been losing out indire through competition with mills ou the district who have been willin pay the premiums. However, it see tle point to the inventory control now proposed. Higher prices on grades should result in at least s temporary improvement, although cast grades are primarily so very sc that there is question as to whe these increases will be of lasting ben

Warehouse . . .

Warehouse Prices, Page 158

Pittsburgh—Status of warehouse tonnage on mills' fourth quarter pro tion schedules still remains uncertain matters now stand, steel distrib cannot use their customers' CC ratin a basis of obtaining steel from the Slight improvement in mill deliveri warehouses for the last six weeks not been uniform throughout the ran steel products, with very little inc

oted in galvanized, light-gage hot and old-rolled sheets, small sized bars, wire ems and most structurals. Warehouse ocks of cold-finished bars, bars 2-in. nd over, plates and alloys are in fair nape. Most steel distributors state over-ll inventories have declined steadily roughout each month this year, and in ome instances are lowest on record. Many warehouse customers continue to perate well below capacity because of he critical shortage of many steel items nd in spite of fact they frequently ac-ept substitute specifications.

Chicago — With inventories declining eadily, warehouses are pressing steel-akers in their attempt to acquire ma-rial of any kind. Unable to obtain ade-uate amounts of steel from mills, con-mers do not hesitate to purchase from istributors whatever they can get to aintain plant operations at highest pos-ble levels. Reports are heard in the ade occasionally of sheets being avail-ble at prices ranging from 8 to 12 cents pound, but like all black market opera-ons, such stories are difficult to con-rm.

Philadelphia — Jobbers are expressing oncern over prospects for receiving mill ipments in the fourth quarter. While ome are faring very well in the cur-ent quarter and some are experiencing ecord-breaking months, they see no such utlook for the final three months of is year, since the present directive un-er which mills must deliver minimum onnages is due to expire Sept. 30. Due o the heavy rated demand upon the ills for sheets for the fourth quarter, ey see little likelihood of receiving any-ing like the same tonnage in that prod-ct. On plates, shapes and bars, which re being subjected to less rated pres-ure at the mill level, they feel les pes-imistic.

Seattle—Sipments of steel to ware-ouses are being impeded by the seamen's trike. Demand for all products is far n excess of supply. Reinforcing bars, heets, wire and pipe are the most critical tems, some unavailable for months. Other stock items are not so tight, but s quickly as they arrive they are for-varded to the job. Consequently, it is mpossible to increase inventories. Ware-ousemen anticipate little improvement or six months or more.

St. Louis—Warehouses continue to ose ground on inventories, with sales onsistently exceeding receipts. Sizes are xtremely unbalanced, and shipments, herefore, are expected to decline the rest f the year. Receipts have gained some ince the strike wave but not as antici-ated. Incoming tonnage so far is only 5 to 70 per cent of what had been ex-ected. Warehouses probably will re-eive in 1946 a tonnage equivalent to wo-thirds that of a normal year. Sheets nd strip are virtually nonexistent and maller structural shapes, bars and bar hapes only a trifle more plentiful. Alloy teels are in best supply. Consumers till attempt to place mill-size orders vith warehouses, demanding in some ases tonnage exceeding a warehouse's nnual receipts.

Cincinnati—Warehouse stocks will be n poor position to meet demands in the ourth quarter in case of a decline in eplacements from mills. On some steel he inventories are adequate, but deliv-ries keep pace with arrivals in sheets, mall bars and structural items. More-ver, jobbers have just about exhausted ossibilities of substitute specifications.

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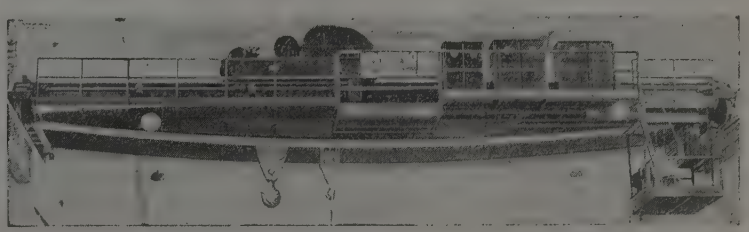

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Rails, Cars . . .

Track Material Prices, Page 157

New York — While new car orders have declined recently, this situation may be only temporary as several sizable lists are pending with still others under contemplation. Domestic freight car buying in the last two months has been unusually active, and car builders do not see the end immediately in sight. Meanwhile there is considerable pressure for car steel, for the completion of orders long scheduled to have been wound up by this time. Considerable export demand is in the background, the latest involving 2000 freight cars and an unspecified number of steel passenger cars for Mexico; however, foreign demand at this time is receiving relatively scant attention, with interest being devoted principally to the speeding up of highly pressing domestic requirements, especially box cars and in perhaps somewhat lesser degree, hopper cars.

Birmingham — Car inquiry continues active. The Pullman company's Bessemer plant, well booked into the new year, is interested in an inquiry from Southern Pacific for 1000 cars and has other prospective business. Rail bookings are limited only by the ability of the Ensley mill to accept the offerings with anything like a reasonable delivery date.

Philadelphia — Car builders continue to be seriously handicapped in their operations by lack of steel. So far as can be learned, no preference has been given car builders by CPA, although the matter has been under urgent discussion for some time, particularly at the instance of the Office of Defense Transportation which has been stressing the acute shortage of cars. Significant of the difficulty car builders are having in obtaining raw materials is the fact that August shipments of freight cars of only 5141 were the largest this year, 4234 having been shipped by commercial shops and 907 by railroad shops. In addition, 68 passenger cars were completed in that month.

According to the American Railway Car Institute, 9530 cars were placed by domestic lines in August compared with 15,236 in July and only 19,042 for the entire first six months of the year. Of the August bookings, more than 7300 cars were placed with commercial shops, it is understood.

Illinois Terminal has placed 150 fifty-ton box cars with American Car & Foundry Co., New York.

Tin Plate . . .

Tin Plate Prices, Page 157

Pittsburgh—Fourth-quarter tin plate output should be at the year's high, slightly exceeding the relatively large production indicated for the current period. Reduction in the amount of tin plate to be channeled into containers for perishable foods, pharmaceuticals and related items to 70 per cent of monthly output will make available more tin plate for B and C items. Manufacturers of these latter items have undergone severe hardships in attempting to maintain output on their slim share of 15 per cent of tin mill products available for general distribution. No significant improvement in overall pig tin supply has developed to date, so there is little prospect that tin plate conservation measures will be relaxed this year. Some improvement in the supply of box cars is noted; however, supply remains in close balance with immediate needs and there is little prospect of further improvement through early fall months. Seasonal demand for food packs have passed their peak, but there will be no recession in overall tin plate demand the remainder of this year with requirements for B and C items more than taking up the slack.

Certification Plan for Pig Iron Modified by CPA

Manufacturers of housing products and railroad brakeshoes have been authorized by the Civilian Production Administration to certify their orders for pig iron during the fourth quarter.

The revised certification plan, however, has discontinued aid to manufacturers in obtaining iron castings. CPA believes that such assistance as may be necessary can be obtained through the regular procedure of applying for "CC" ratings under direction 18 to priorities regulation 28.

Farm machinery products also have been eliminated from the fourth quarter certification plan as it was considered that these products are not as critically needed as housing products during the balance of the year.

Any manufacturer who receives a rated order from his customer is prohibited, under terms of direction 16 to priorities regulation 3 as amended, from extending this rating to purchase pig iron. Priorities assistance for pig iron will be assigned only under direction 13 to M-21.

Read Workers' Letters, GE President Advises

A recommendation that businessmen spend a little more time "hanging over the back fence" and getting in touch with the rank and file of working people was made by C. E. Wilson, president, General Electric Co., last week at the rededication of the General Electric Institute at Nela Park, Cleveland,

Mr. Wilson suggested that businessmen make a practice of reading letters which come in from employees. "You will be annoyed, infuriated, baffled, pleased and occasionally inspired, but you will learn what people think of business . . . .

"The most important thing that you will learn is that many factory workers have a surprisingly good understanding of the laws of supply and demand, and of the relation of costs to prices, whereas many professional people, who comprise the opinion forming groups, are shockingly ignorant of these matters and have little conception of the historic and transcendent role of the system of free enterprise in American economy."

The rededication ceremonies marked the reopening of the rebuilt and re-equipped institute following wartime interruption of its activities and coincided with the 25th anniversary of its establishment

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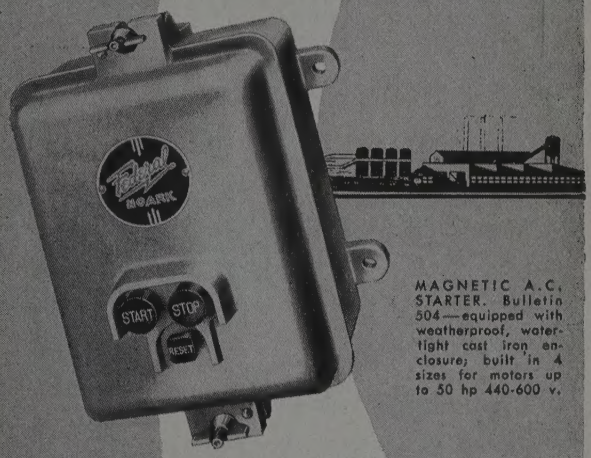

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New Price List Issued for Swedish Sponge Iron Powder

A new price list for Hoeganaes sponge iron powder, inported from Sweden, has been set up by Ekstrand & Tholand Inc., 441 Lexington Ave., New York city. Importation of Swedish sponge iron powder was suspended during the war, but by early this year was resumed on an increasingly important commercial scale.

Under the new schedule, the company is now quoting prices for the material packed in special ocean paper bags only, and listing the extras applicable for the bags crated and for shipping of material in iron drums, when drums are available.

Quality "A" is quoted 7.40c per pound, packed in ocean bags, and "AA" at 8.00c per pound, both 100 U. S. mesh, maximum, cif New York, duty paid, carload lots. Specifications for quality "A" are: SiO_2, 0.2 per cent, maximum; C, about 0.2 per cent; loss in hydrogen, 1.50 per cent maximum; Fe, 97 per cent plus; density, 2.4 or 2.7. Specifications for quality "AA" are: SiO_2, 0.2 per cent maximum; C, about 0.2 per cent; loss in hydrogen, 0.7 per cent maximum; Fe, 98 per cent plus; density, 2.4 or 2.7.

Extras are: For bags in crates, 0.5c per pound; for iron drums, 1.1c per pound; for quantity: Lcl to 2240 lb, 0.50c; 2239 to 250 lb, 2c; 249 to 100 lb, 3.50c; x 99 to 50 lb, 4c; under 50 lb, 5c.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1800 tons, office building, Mobile, Ala., for Doullut & Ewin, to Ingalls Iron Works, Birmingham.

1200 tons, plant, Norfolk, Va., for U. S. Gypsum Co., to Lackawanna Steel Construction Corp., Buffalo; bids Sept. 4.

1000 tons, warehouse, Danahy-Faxon Stores, Buffalo, placed through Turner Construction Co., with the Lehigh Structural Steel Co., Allentown, Pa.

930 tons, office building, Mobile, Ala. for Waterman Steamship Lines, to Ingalls Iron Works, Birmingham.

650 tons, regulation gate for spillway, Davis dam, Louise, Ariz., for U. S. Bureau of Reclamation, to Consolidated Steel Corp., Los Angeles.

500 tons, board mill, Natchez, Miss., for Ford, Bacon & Davis Inc., New York, to Ingalls Iron Works, Birmingham.

500 tons, hangar, Seattle, for Northwest Airlines, to Pacific Car & Foundry Co., Seattle.

126 tons, substation, Spec. 1449, Araby, Ariz., for U. S. Bureau of Reclamation, to Tulsa Boiler & Machinery Co., Tulsa, Okla.; bids Aug. 30.

104 tons, bridge, F-113(S), Knox county, Neb., for state, to Omaha Steel Works, Omaha; bids Aug. 1.

STRUCTURAL STEEL PENDING

1000 tons, factory building, Bellwood, Ill., for Chicago Screw Co.

390 tons, building, Pasadena, Tex., for Ebasco Services Inc.

154 tons, bridge, Sec. 136 F-2, Cache, A... ander county, Ill., for state; Illinois S... Bridge Co., Jacksonville, Ill., low on ... July 26; bids rejected.

149 tons, bridge, Sec. 1-F, McLean county, ... for state; Illinois Steel Bridge Co., Jacks... ville, Ill., sole bidder on bids Aug. 27; ... rejected.

120 tons, bridge, Sec. 43-F, Pike county, ... for state; Illinois Steel Bridge Co., Jacks... ville, Ill., sole bidder on bids Aug. 27; ... rejected.

REINFORCING BARS . . .

REINFORCING BARS PLACED

515 tons, No. 2 toll office building, Chica... for Illinois Bell Telephone Co., to Conc... Steel Co., Chicago; A. Fuller Co., Chica... contractor; bids Aug. 12.

200 tons, new food market and wareho... Danahy-Faxon Stores Inc., Buffalo, to ... Truscon Steel Co., Youngstown, O.

100 tons, men's dormitory, College of Pu... Sound, Tacoma, Wash., to Northwest St... Rolling Mills, Seattle.

100 tons, Washington state highway proje... to Northwest Steel Rolling Mills, Seattle.

REINFORCING BARS PENDING

2500 tons, James Weldon Johnson houses, ... New York City housing authority, Wil... Construction Co. Inc., 11 East 44th Str... low on the general contract.

1100 tons, tunnel, Whiting, Ind., for Stand... Oil Co. of Indiana.

PIPE . . .

STEEL PIPE PENDING

Unstated, about 40,000 feet, 36-inch-steel pi... for Olympia, Wash., alternate concrete pi... Morrison-Knudsen Co., Seattle, low for ste... $1,574,151.

PLATES . . .

PLATES PENDING

200 tons or more, 186-foot, stern wheel tug f... Port of Portland, to Northwest Marine Ir... Works, Portland, Oreg.

Unstated, million-gallon elevated steel tan... Portland, Ore.; Pittsburgh-Des Moines Ste... Co., low, $114,827, completion 12 month...

RAILS, CARS . . .

RAILROAD CARS PLACED

Chicago & North Western, 46 streamlined pa... senger cars, to Pullman-Standard Car Mf... Co., Chicago; the list includes 27 coache... 9 parlor cars, 4 baggage-rail cars, 4 tap-din... lounge cars, 1 cafe-coach and 1 dining ca...

RAILROAD CARS PENDING

Central of Pennsylvania and Lehigh & Hudso... River, twenty-eight 70-ton covered hopp... cars, inquiry issued jointly.

Mexican State Railways, 2000 freight cars an... an unspecified number of steel passeng... coaches, bids asked.

Missouri Illinois, 150 seventy-ton cars, includin... one hundred 41-foot 9-inch hopper car... thirty-five 41-foot 9-inch covered hopper ca... and fifteen 35-foot 2¾ inch covered cemen... cars.

St. Louis-San Francisco, 3 new passenge... trains, including 38 coaches and three 4000... horsepower Diesel locomotives, and also 30... automobile cars, federal court approval re... quested for purchase of equipment estimate... to cost approximately $7,346,000.

LOCOMOTIVES PLACED

Gulf, Mobile & Ohio, one 1500-horsepowe... Diesel-electric freight engine, to the Ingall... Shipbuilding Corp., Birmingham, Ala.

LOCOMOTIVES PENDING

Clinchfield, four to eight 4-6-6-4 type steam lo... comotives, bids asked.

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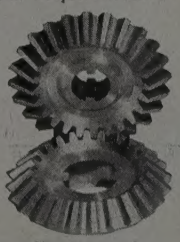

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CONSTRUCTION AND ENTERPRISE

ALABAMA

BIRMINGHAM—Frisco Lines, 107 N. 20th St., has plans to construct a $246,000 warehouse.

DECATUR, ALA.—Calumet & Hecla Consolidated Copper Co., Wolverine Tube Division, Calumet, Mich., has awarded contract for copper tubing and copper products plant to Foster-Creighton Co., American National Bank Bldg., Nashville, Tenn. Plant is estimated to cost $3 million. Howard, Hickerson & Dinkins Inc., 3041½ Third Ave., Nashville, is the architect.

CONNECTICUT

DANBURY, CONN.—Bieber-Goodman Corp., E. Liberty St., has awarded contract for two-story, 50 x 175-foot factory to B. J. Dolan, 207 Greenwood Ave., Bethel, Conn., at an estimated cost of $100,000. LaCava & Campbell, 248 Main St., are architects.

HARTFORD, CONN.—G. F. Heublein & Brother Inc., 330 New Park Ave., has awarded contract for two-story, 105 x 300-foot factory to Wadhams & May Co., 15 Lewis St., for an estimated $300,000. Fletcher Thompson Inc., 211 State St., Bridgeport, Conn., is the architect.

DELAWARE

WILMINGTON, DEL.—E. I. duPont de Nemours & Co. Inc., Nemours Bldg., has plans to construct an experimental station expansion at a cost of $17,000,000. Jaros, Baum & Bolles, 415 Lexington Ave., New York, are engineers. Plans have been drawn by Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, and F. A. Godley, 247 Park Ave., New York, associate architects.

GEORGIA

MACON, GA.—Welding Supplies Inc., c/o C. W. Farmer, president, is planning construction of an oxygen and acetylene gases manufacturing factory to cost $100,000.

INDIANA

COLUMBUS, IND.—Cummings Engine Co., C. L. Cummings, president, Columbus, has awarded contract for design and construction of one-story, 60 x 175-foot factory addition; one-story, 55 x 60-foot oil bulk station; pump house; oil distribution system; warehouse; and office to the Austin Co., Euclid Ave., Cleveland, to cost an estimated $120,000.

GARY, IND.—National Tube Co., Gary, has awarded contract for one-story seamless tube rolling mill addition to Aetna Standard Engineering Co., Home Savings & Loan Bldg., Youngstown, for an estimated $700,000.

IOWA

BROOKLYN, IOWA—City has awarded a contract to Fairbanks Morse & Co., Omaha, Nebr., for improvements to the municipal power plant to cost $55,000.

CHARLES CITY, IOWA—Salsbury's Laboratories, J. E. Salsbury, president, has awarded the contract for erection of a $600,000 manufacturing plant to Rye & Henkel, Mason City, Iowa. Hansen & Waggoner, Mason City, are architects.

LOUISIANA

DELHI, LA.—Sun Oil Co., 1608 Walnut St., Philadelphia, has awarded separate contracts for a natural gas processing plant to cost $1 million. Petroleum Engineering Co., Commerce Bldg., Houston, Tex., is engineer.

MINNESOTA

MINNEAPOLIS—Standard Iron & Wire Works, H. Z. Demeules, 1900 Northeast Third St., will let a contract for a one-story, 100 x 200-foot factory at 30th Ave. N. and Second St. to cost $110,000. Armstrong & Schlichting, 1409 Willow St., are architects.

ST. PAUL—Huot Mfg. Co., 128 E. Tenth St., has awarded general contract for one-story, factory at Wheeler St. and Charles Ave. to Saures Construction Co., 1543 W. Larpenteur Ave., to cost approximately $58,000.

MISSISSIPPI

JACKSON, MISS.—The Taylor Machine Works, Jackson, will build a 1½-story machine shop to cost $75,000.

OHIO

ASHTABULA, O.—Electro Metallurgical Co., Lake Rd. E., has placed into operation its third carbide furnace since purchase of the plant property from WAA.

CANTON, O.—Babcock Printing Press Corp., New London, Conn., will begin operation soon of the former Dayton Malleable Iron Co. plant on Waynesburg Rd. S. E., recently purchased from WAA for $200,000. High speed, rotary magazine color presses will be built in the plant.

CINCINNATI—B. C. Home Air Conditioners, 1822 Sycamore St., has been formed by Sam J. Capozzolo and John P. Banbach and will specialize in designing and fabricating air conditioning ductwork for homes, shops and offices.

CLEVELAND—Durolet Mfg. Co. has been formed by Sam Stryffeler, 10106 Nanford Ave., to manufacture electric conduit fittings. The company will be located at 6321 Detroit Ave. when the present occupant leaves in the next few weeks.

CLEVELAND—Aluminum Coating Manufacturers Inc., 16710 Waterloo Rd., has been incorporated through Peter L. Horwitz, Engineers Bldg., to manufacture coatings of all kinds.

CLEVELAND—General Electric Co., 1734 Ivanhoe Rd., has leased two connecting two-story buildings at 5810 Euclid Ave. which will be used for assembly of vacuum cleaners.

CLEVELAND—Chase Brass & Copper Co., Cleveland, has purchased the government-owned plant at 1121 E. 260th St., Euclid, O., operated by the company during the war. The plant, site and equipment was bought from WAA for $5,012,522. The plant will be equipped to manufacture sheet brass.

CLEVELAND—Westover Corp., formed by James F. Preston Jr., Union Commerce Bldg., will manufacture, process and fabricate sheet metal cabs and vehicles, cabinets, trays and panels.

CLEVELAND—Cleveland Electric Illuminating Co. has announced a three-year expansion program involving $30 million, which will include installation of a 90,000 kw generator.

GIRARD, O.—Syro Steel Co., 1123 Tod Ave., has been incorporated and will manufacture patented steel nailer beams. Andrew E. Syak, same address, is president.

LAKEWOOD, O.—Jack & Heintz Precision Industries Inc., 17600 Broadway, Maple Heights, O., has awarded contract for a one-story, 60 x 200-foot, storage and receiving addition at W. 117th St. to Stremple Construction Co., 17500 Broadway, Maple Heights, for $70,000. Wilbur, Watson & Associates, 4614 Prospect Ave., Cleveland, are engineers.

MALVERN, O.—Malvern Steel & Forge, newly organized, has been formed to be a flat hammer forging shop, specializing in tool steel and special steel for the auto and tool industries. A plant will be constructed in Malvern next spring. R. S. Rieman, 14263 Roselawn, Detroit, is associated with the firm.

STEUBENVILLE, O.—Wheeling Steel Corp., Wheeling Steel Corp. Bldg., Wheeling, W. Va., is reported to be negotiating with officials to purchase the Ohio river waterf from Adams street south to the compa property.

YOUNGSTOWN—Youngstown Sheet & T Co. is planning to build a $57,810 exten to the present machine shop building the Campbell plant. Cost quoted is for st tural work only and does not include additional machinery which is to be insta

OREGON

PORTLAND, OREG.—Willard Storage Bat Co., E. 131st St., Cleveland, has awar contract for a one-story, 150 x 360 storage battery factory at N. W. 35 and Y Ave. to Donald M. Drake Co., Lewis Bl Portland, for $300,000. Annand & Kenne Central Bldg., are architects.

PORTLAND, OREG.—Starr Fruit Products plans construction of a $1,000,000 cann plant to replace present factory. Equipm will cost $450,000.

PENNSYLVANIA

BRIDGEPORT, PA.—Owner, c/o B. Pr 1911 Pine St., Philadelphia, will soon contract for a factory addition to cost $6 000.

BRIDGEVILLE, PA.—Universal Cyclops St Corp., Bridgeville, has awarded contract a one-story, 65 x 95-foot, 2-story, 25 x 1 foot steel mill addition to Fort Pitt Bric Works, Keystone Hotel, Pittsburgh, at estimated $60,000.

CORAOPOLIS, PA.—Russell Birdsall & W have awarded contract for one-story, 53 145-foot factory to Frazier Co., 95 S. S teenth St., Pittsburgh, at a cost of about $5 000. R. L. Patillo, 5914 Walnut St., Phi delphia, is the engineer.

LANSDALE, PA.—Philco Corp., Lansdale, h postponed indefinitely plans to construct laboratory and engineering building whi was to have been built at a cost of $15 000.

MEADVILLE, PA.—American Brake Shoe C Meadville, has let $55,000 contract for on story bearing manufacturing plant for N tional Bearing Metal Division to Ragn Benson Co., 4744 W. Rice, Chicago. J. Go don Turnbull Inc., 2630 Chester, Clevela is the engineer.

PHILADELPHIA—Colonial Iron Craftsme 1332 S. 9th St., has asked that bids be sub mitted for a shop and office building to co about $55,000. J. L. Stesler, Woodside an Montgomery Aves., Ardmore, Pa., is t architect.

TEXAS

DALLAS, TEX.—Alford Terminal Warehouse Industrial Blvd., has begun clearing a 6 acre site for construction of a $2 millio warehouse project to consist of two unit 220 x 1500 feet.

MIDLAND, TEX.—Frontier Chemical Co. plan construction of $500,000 electrochemica manufacturing plant to manufacture hydro chloric acid and caustic soda.

HOUSTON, TEX.—Anchor Post Fence Co. o Texas, C. B. Stillinger, manager, plans t build a one-story warehouse and office build ing at 1505 Gentry St.

WASHINGTON

SEATTLE—Rossoe Mfg. Co., 413 Fairview Ave. N., has awarded contract for two-story 60 x 160-foot, oil burner manufacturin plant addition to O. Boen, 661 E. Northlak St., for $60,000. S. Ivarsson, Skinner Bldg. is the architect.

WISCONSIN

WEST ALLIS, WIS.—LeRoi Co., 1706 S. 68th St., has awarded contract for one-story 50 x 400-foot factory addition to Klug & Smith Co., 111 E. Wisconsin Ave., Milwaukee, for an estimated $224,000.